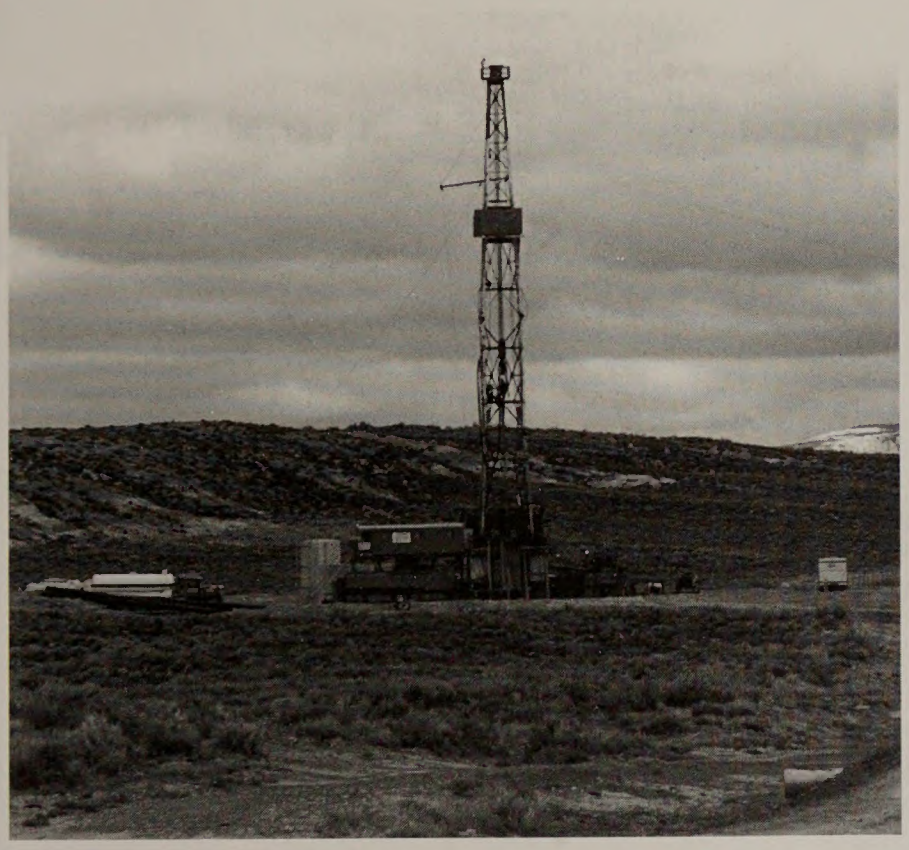
BLM LIBRARY
88058370

U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office

Rock Springs Field Office July 2004

FINAL
Environmental Impact Statement for the Jack Morrow Hills Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment

Volume 2 of 2









MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

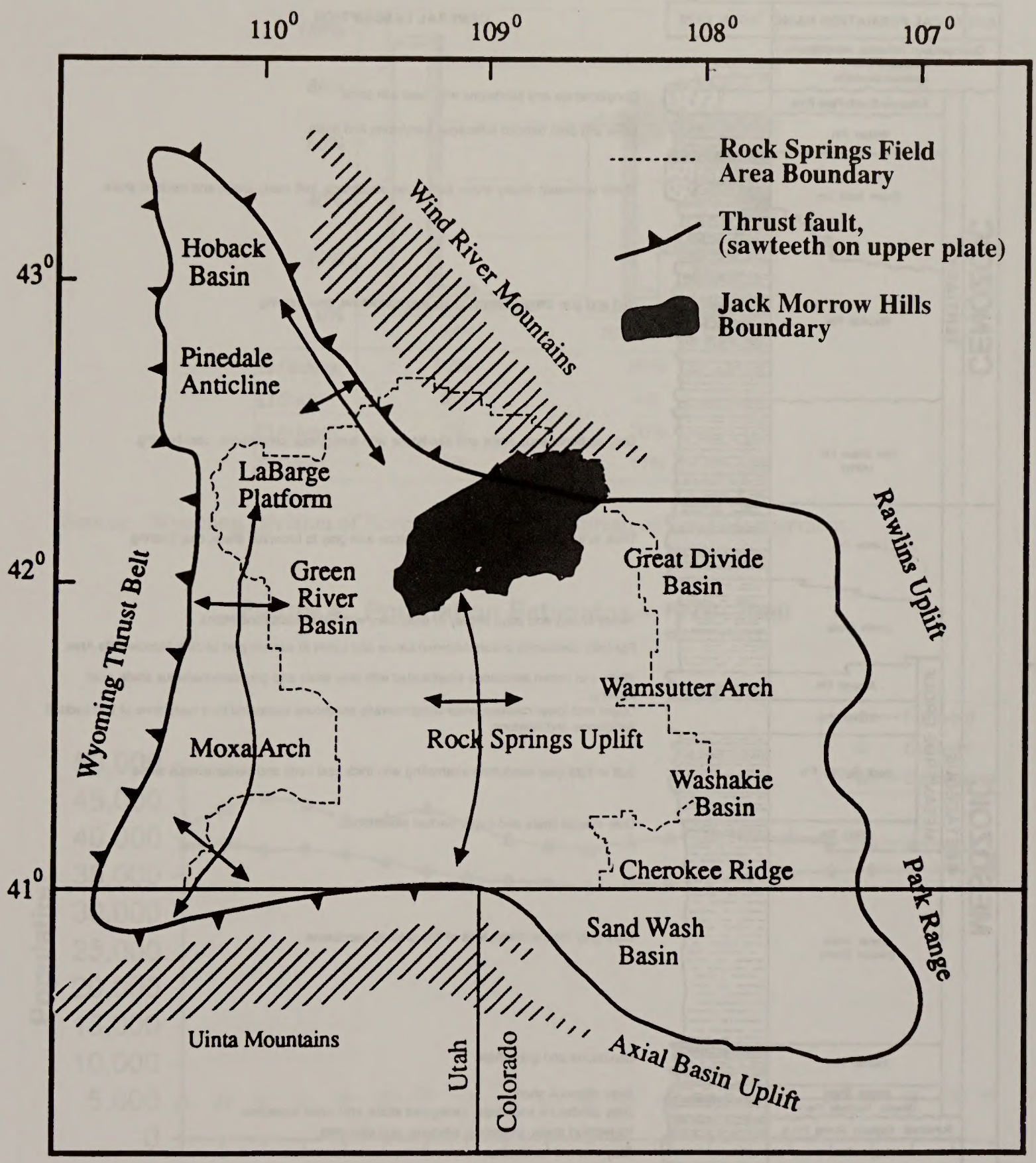
BLM/WY/PL-04/019+1610

#57388364

1D. 80058370

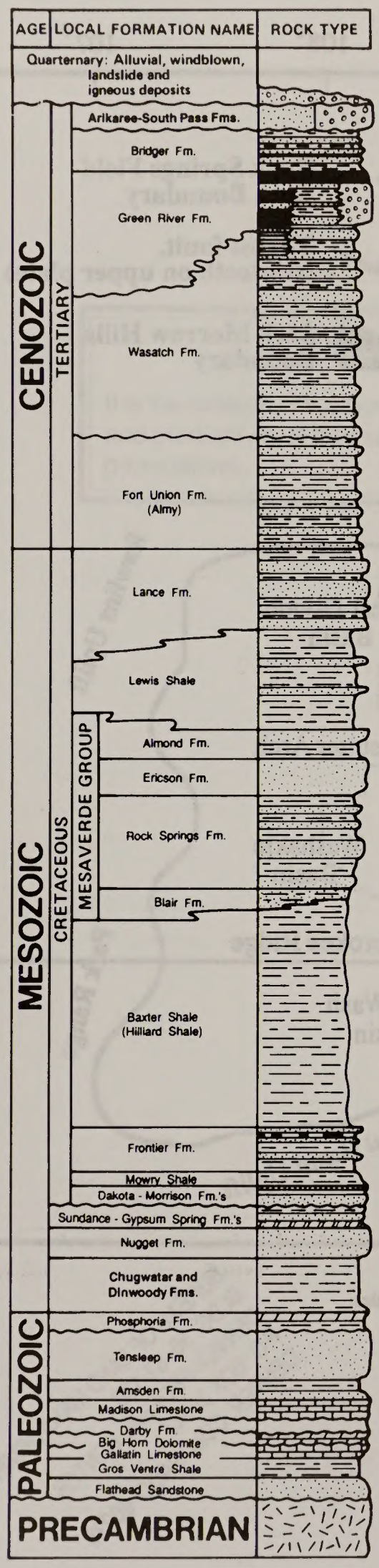
HD
243
.W8
F56
2004a
v.2

Figure 1. Structural Elements of the Greater Green River Basin



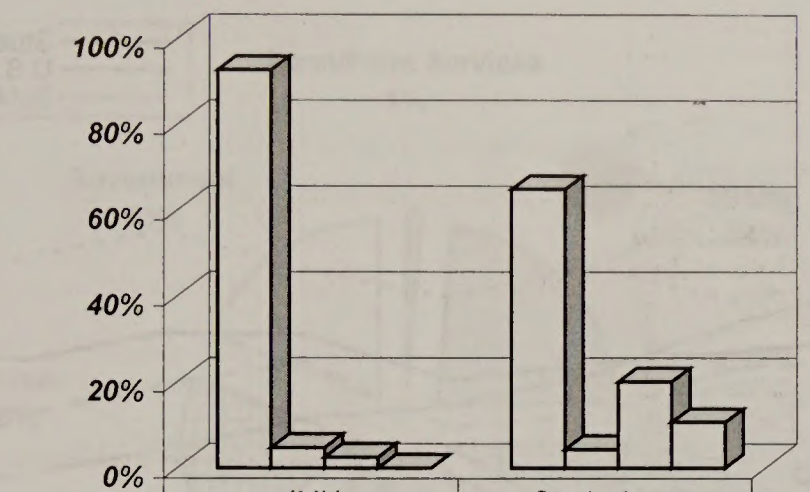
BUREAU OF LAND MANAGEMENT LIBRARY
BLDG. 50, ST-136
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, COLORADO 80225

Figure 2. Generalized Stratigraphic Nomenclature Chart



GENERAL DESCRIPTION
Conglomerate and sandstone with local ash beds.
Olive and drab banded tuffaceous sandstone and shale.
Thinly laminated chalky shale, buff-brown sandstone, soft marly shale, and black oil shale.
Red and gray conglomerate; shale and sandstone. coal bearing.
Gray carbonaceous shale and sandstone with ferruginous concretions, coal bearing.
Thick to thin bedded gray to buff sandstone with gray to brownish shale, coal bearing.
Sandy shales and clays of gray or drab color with calcareous concretions. Fox Hills Sandstone occurs between Lance and Lewis in eastern part of Jack Morrow Hills Area.
White and brown sandstone interbedded with gray shale and gray carbonaceous shale, coal bearing. Upper and lower massive white conglomeratic sandstone separated by a rusty zone of thin bedded sandstone and siltstone.
Buff to light gray sandstone alternating with thick coal beds and carbonaceous shale.
Gray marine shale and ripple marked sandstone.
Dark gray marine shale, lens of fine-grained sandstone.
Sandstone and gray shale.
Gray siliceous shale.
Gray sandstone and shale, variegated shale, and white limestone.
Variegated shale, limestone, siltstone, and evaporite.
Gray and red sandstone.
Variegated shale, siltstone, and limestone.
Dark chert, shale, dolomite and phosporite.
Gray sandstone and dolomite.
Gray or tan limestone and dolomite. Massive, blue and gray limestone and dolomite. Varicolored shale and siltstone and brown dolomite and limestone. Massive gray dolomite. Gray and tan limestone. Gray and green shale. Red quartzitic sandstone.
Metasedimentary and granite rocks.

Figure 3. Land Ownership—1996



	JMH	Study Area
Federal	93%	65%
State	5%	4%
Private	3%	20%
Other	0%	11%

Source: Wyoming Division of Economic Analysis; Bureau of Land Management.

Figure 4. Population Estimates—1970–2000

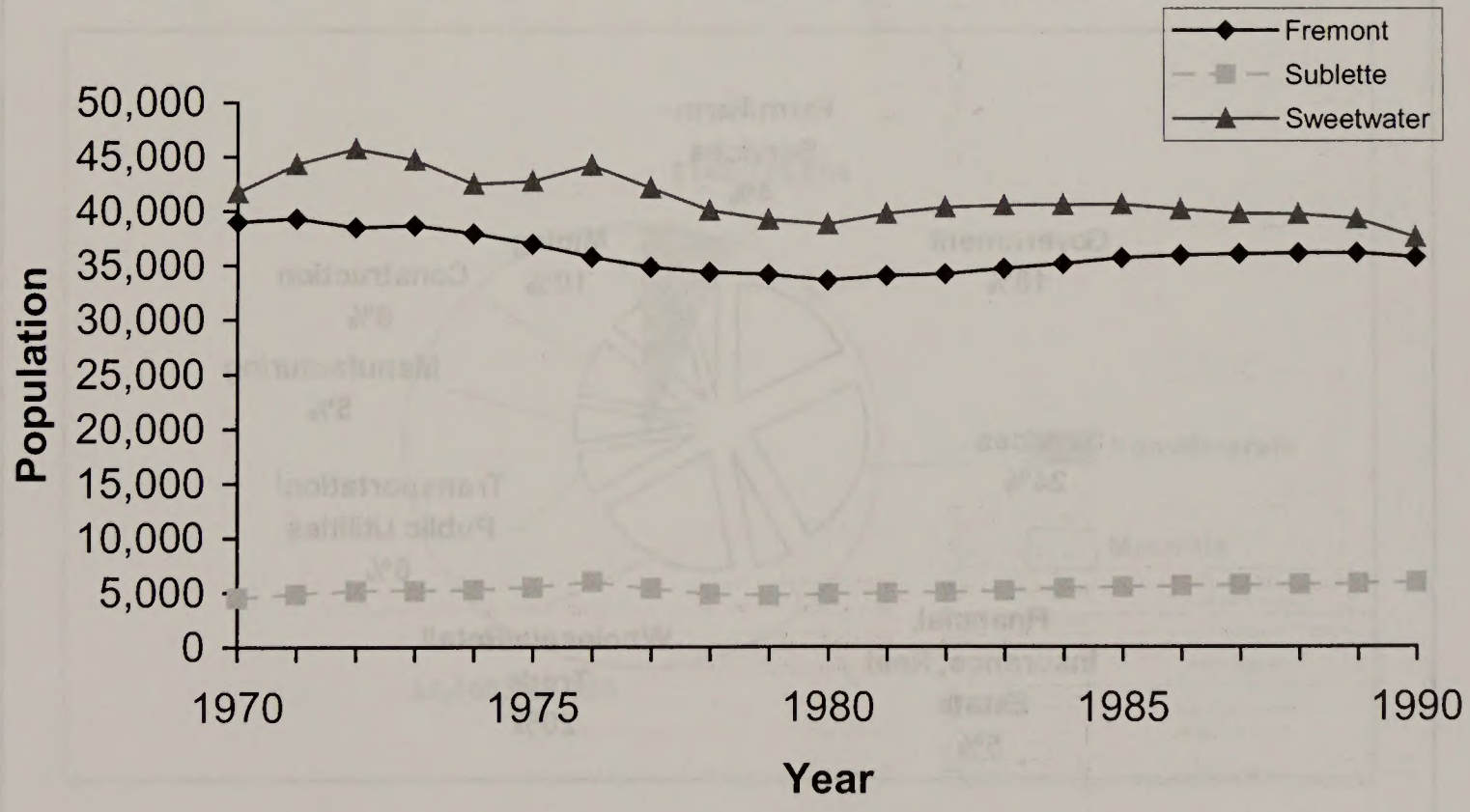


Figure 5. Unemployment Rate—1991–2000

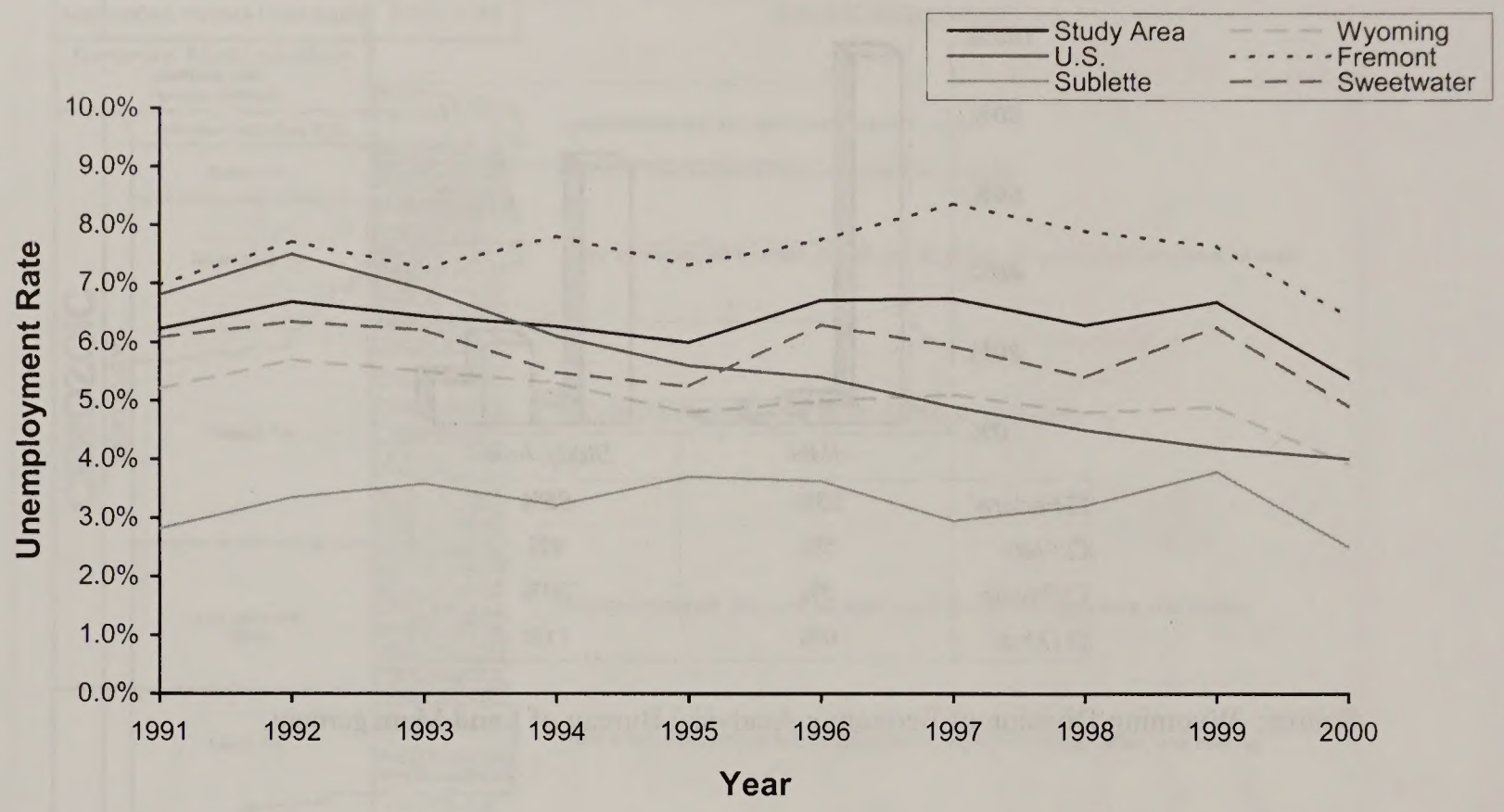


Figure 6. Employment by Industry in Study Area—1999

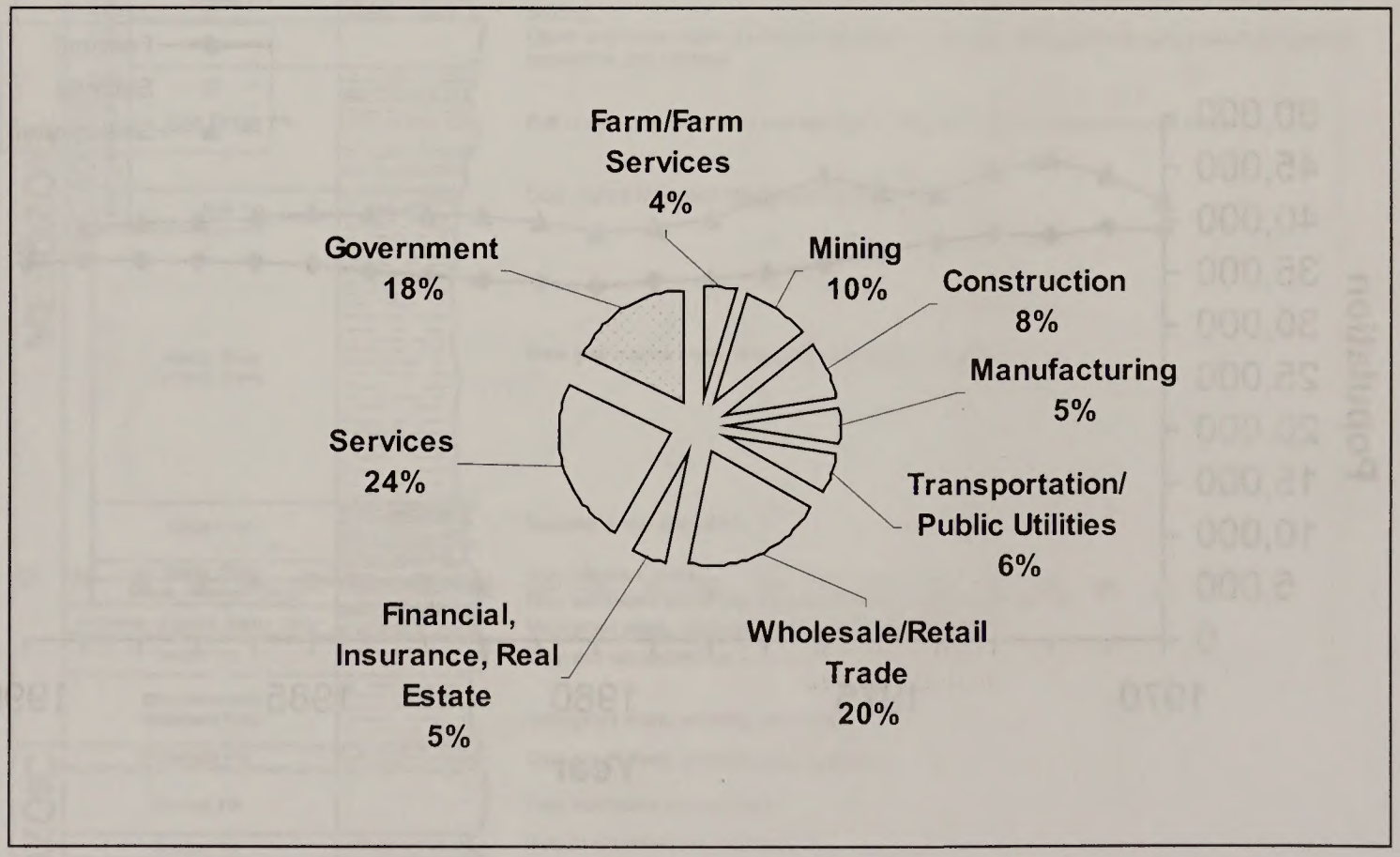


Figure 7. Gross Earnings by Industry in Study Area—1999

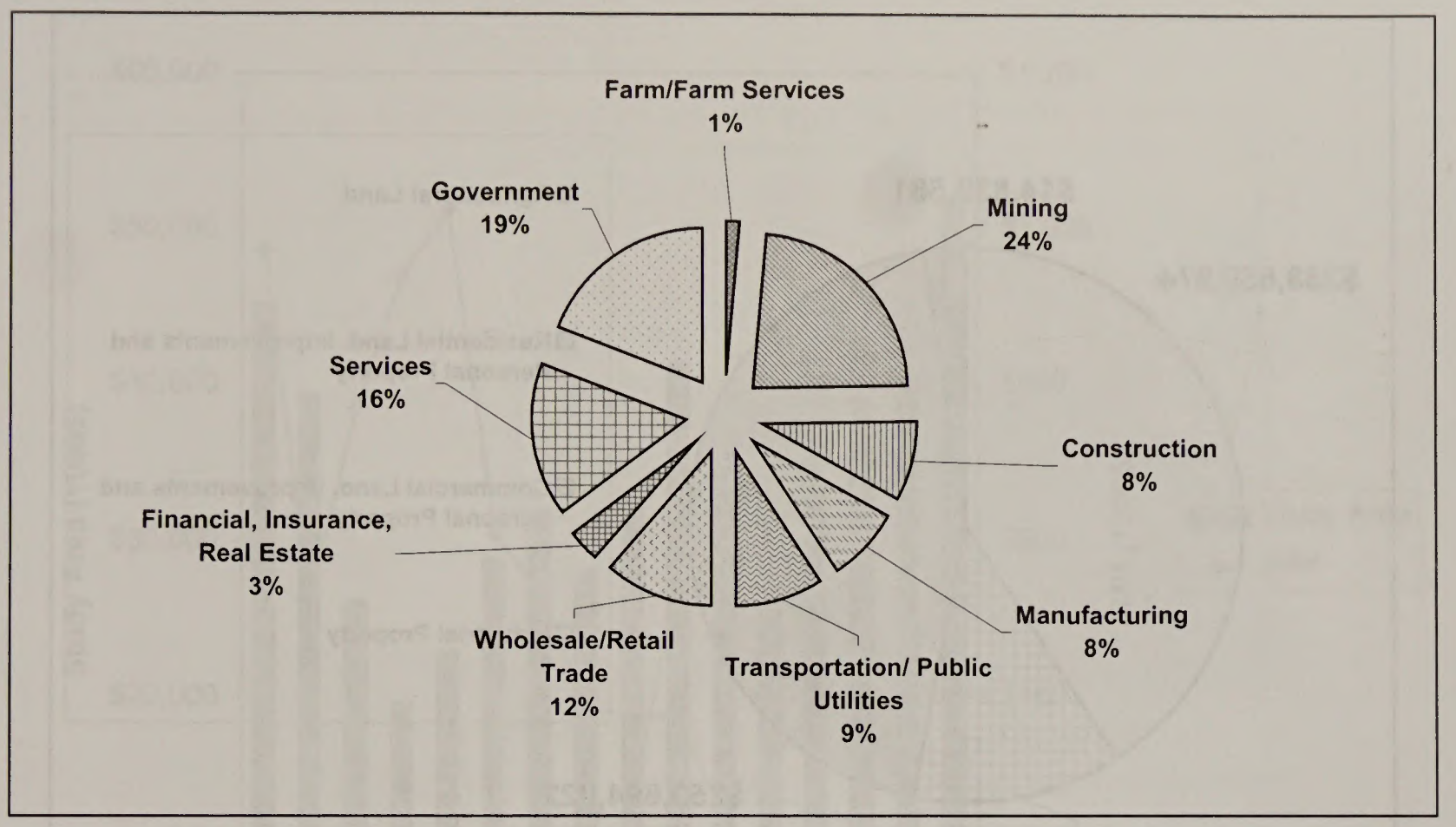


Figure 8. State Assessed Property

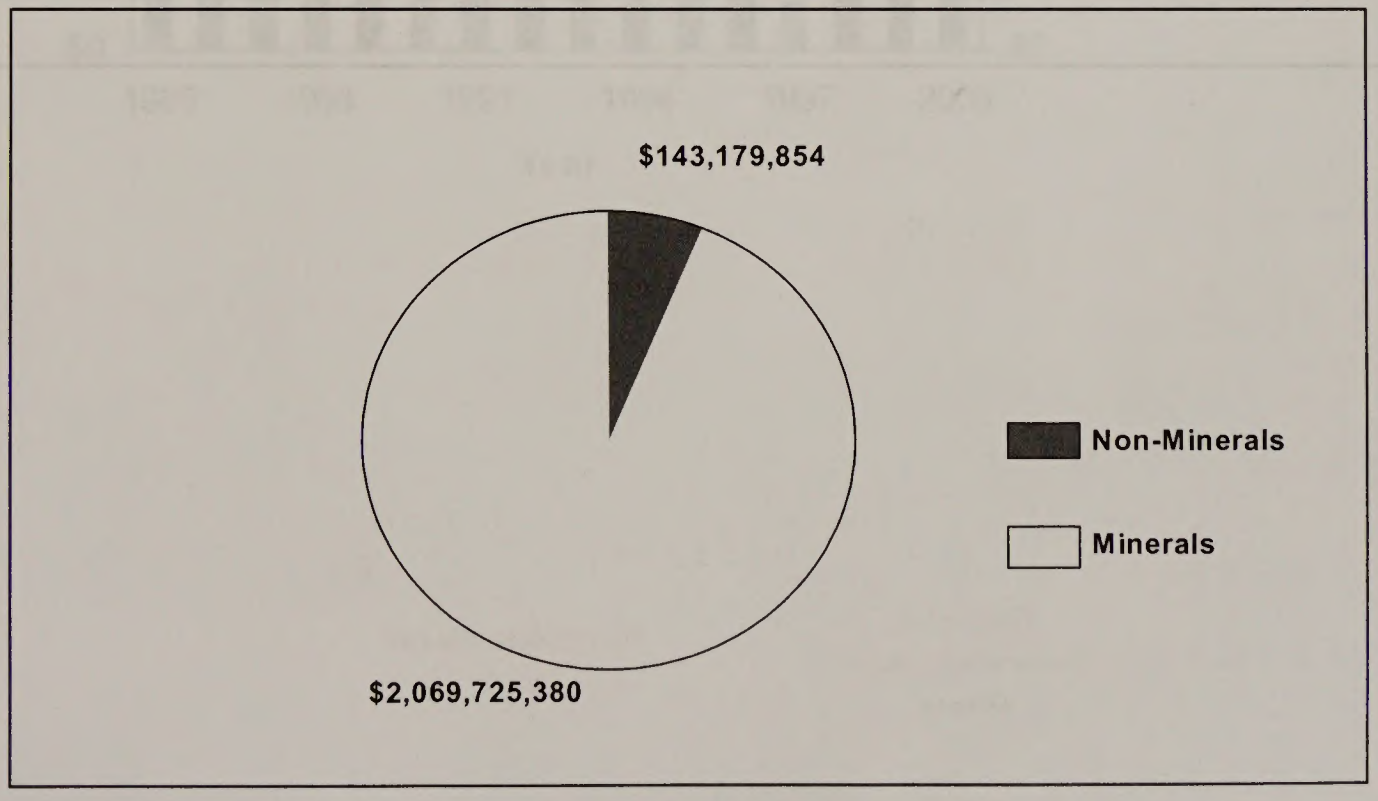


Figure 9. Locally Assessed Property

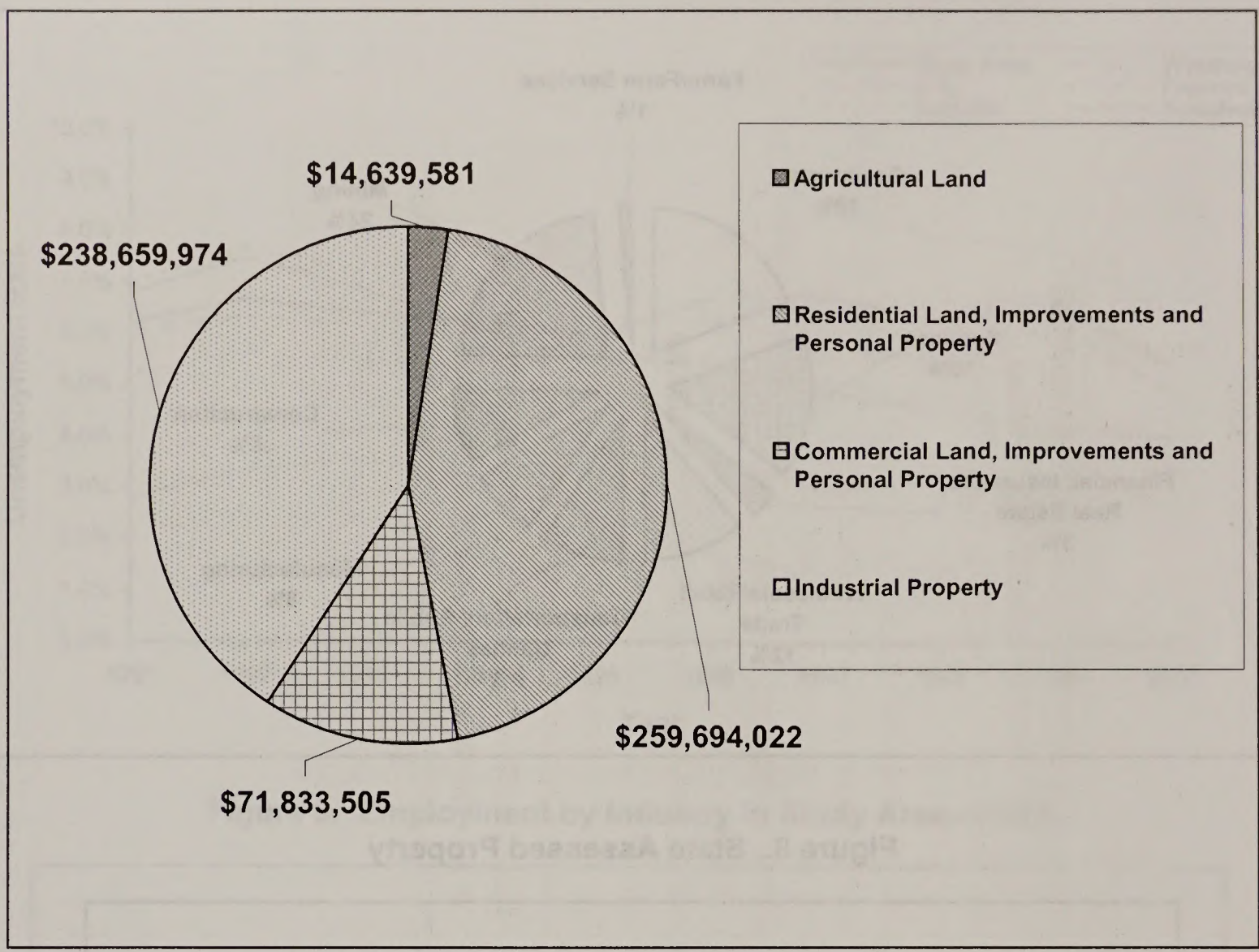


Figure 10. Estimated Ad Valorem Taxes—1985–2000 (1995 dollars)

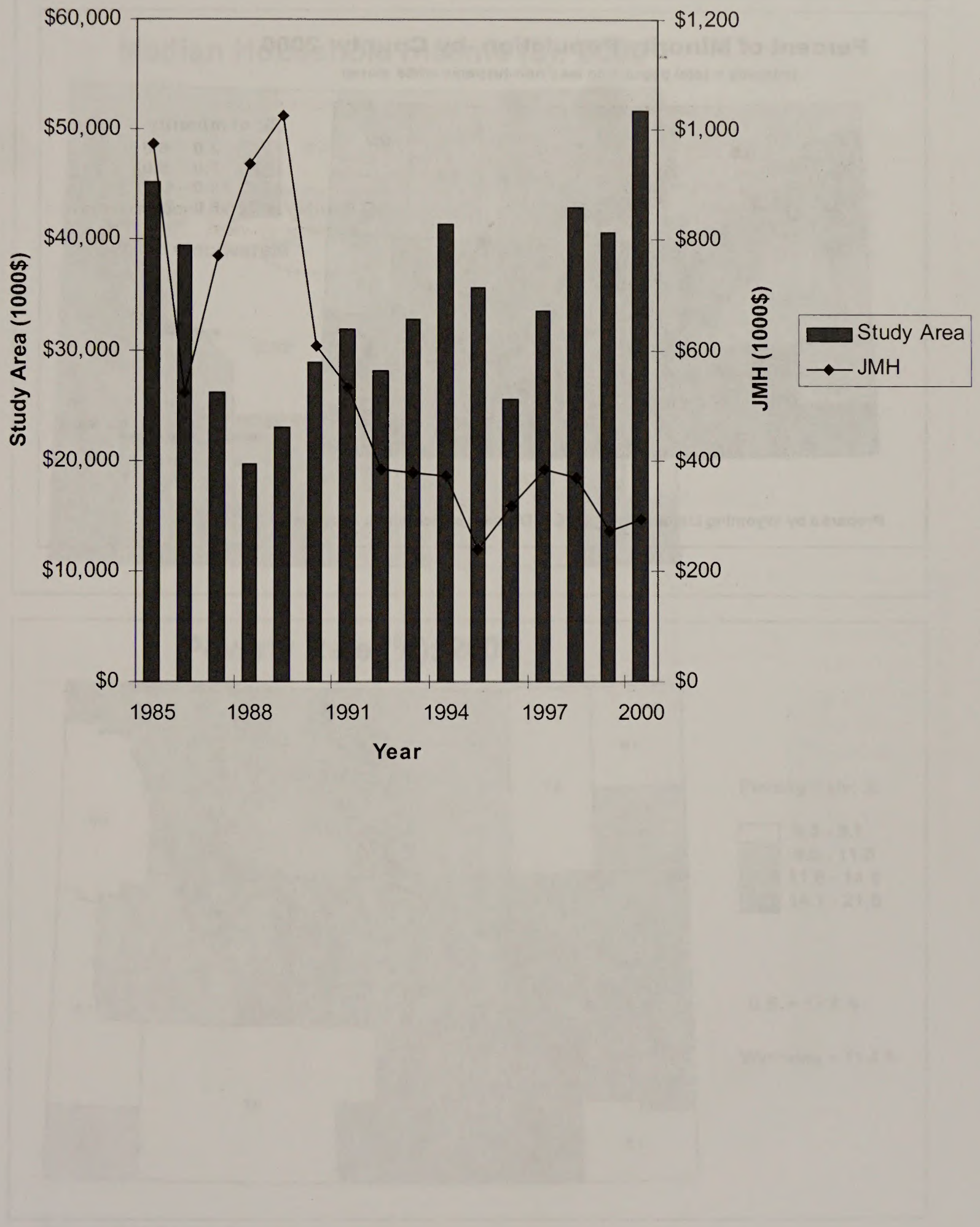


Figure 11. Percent of Minority Population by County—2000

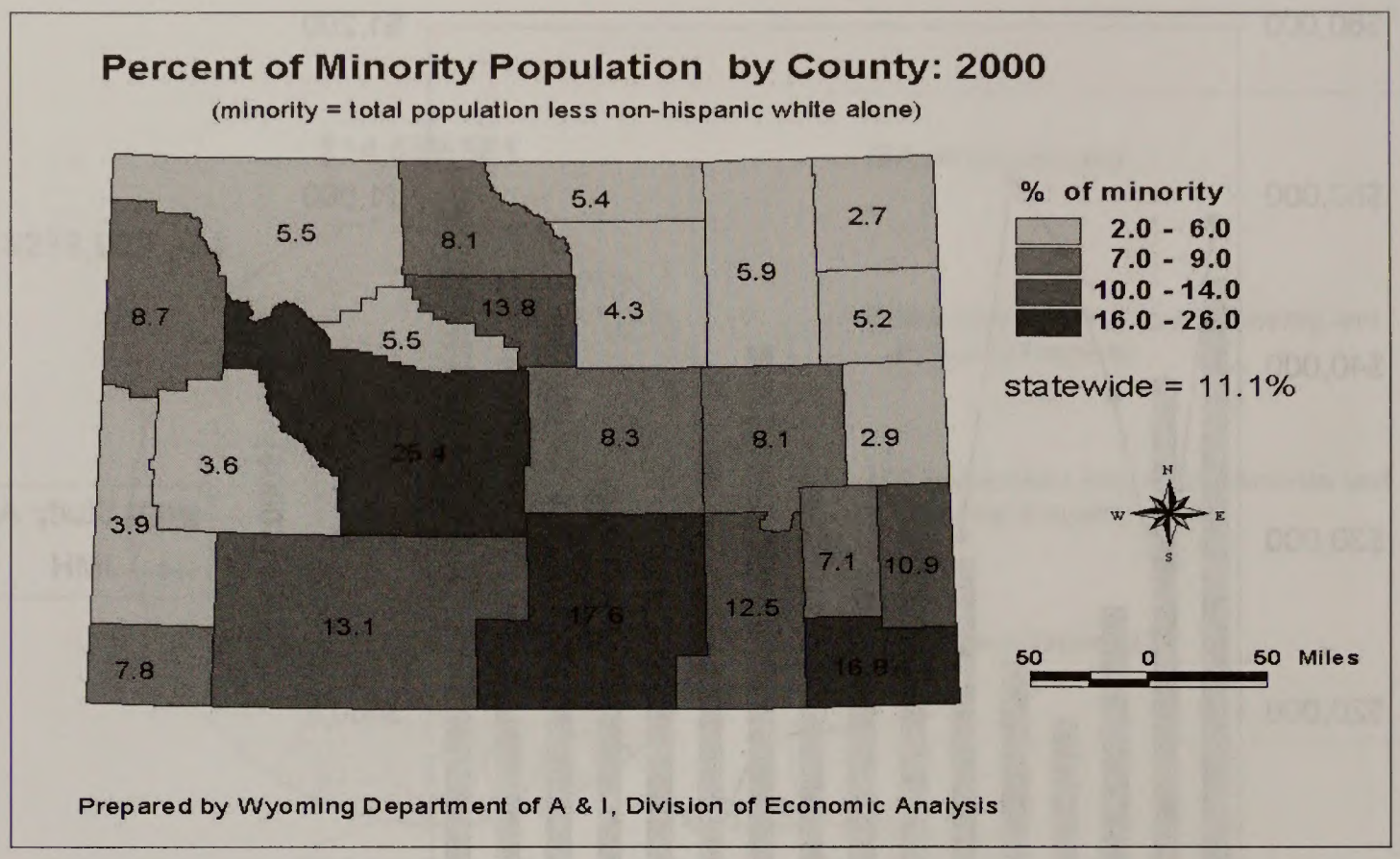
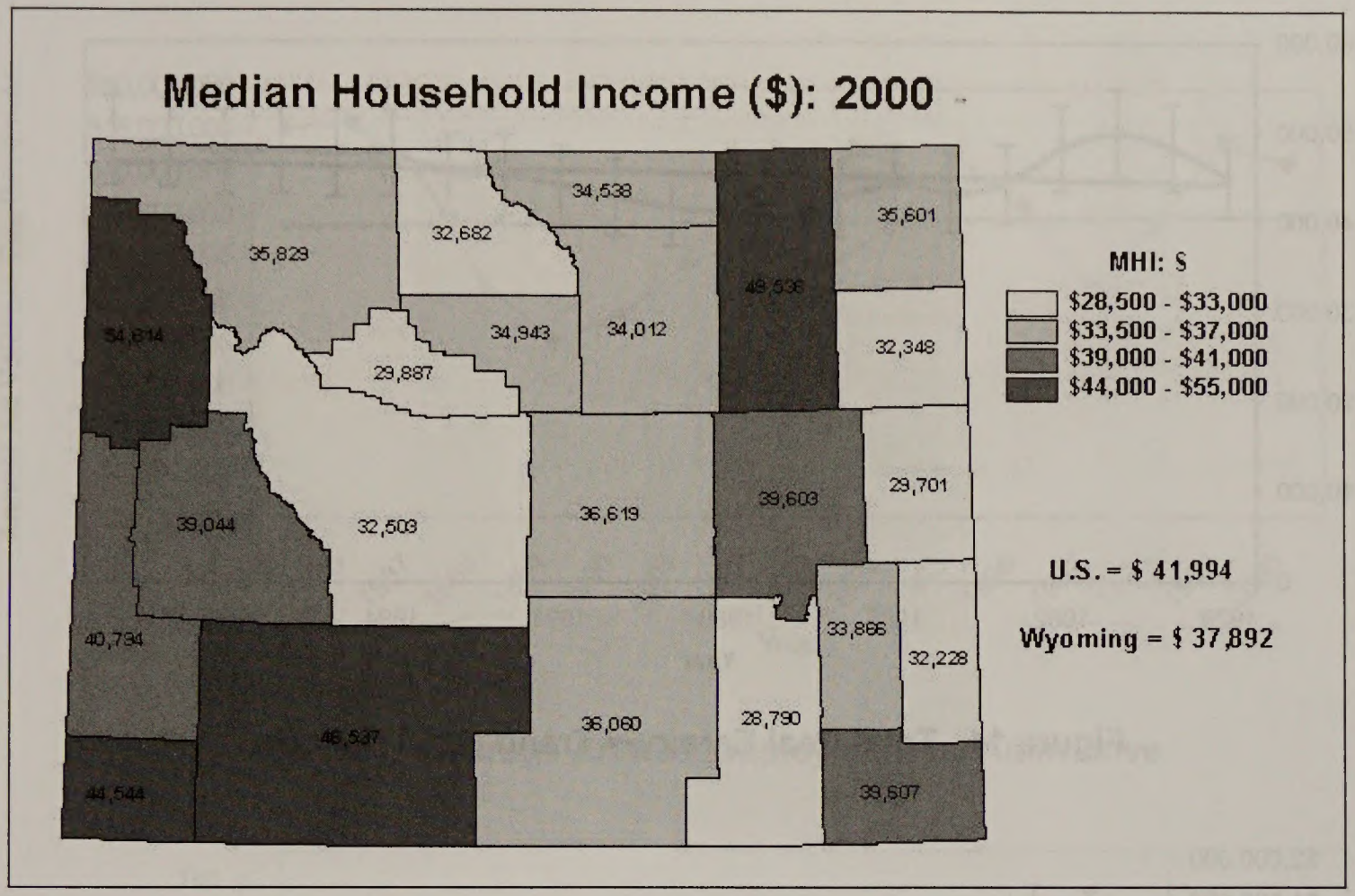


Figure 12. Median Household Income ($)—2000 and Poverty Rate (%)—2000



Source: U.S. Census Bureau

Prepared by Wyoming Economic Analysis Division

Figure 13. Total Employment Trend

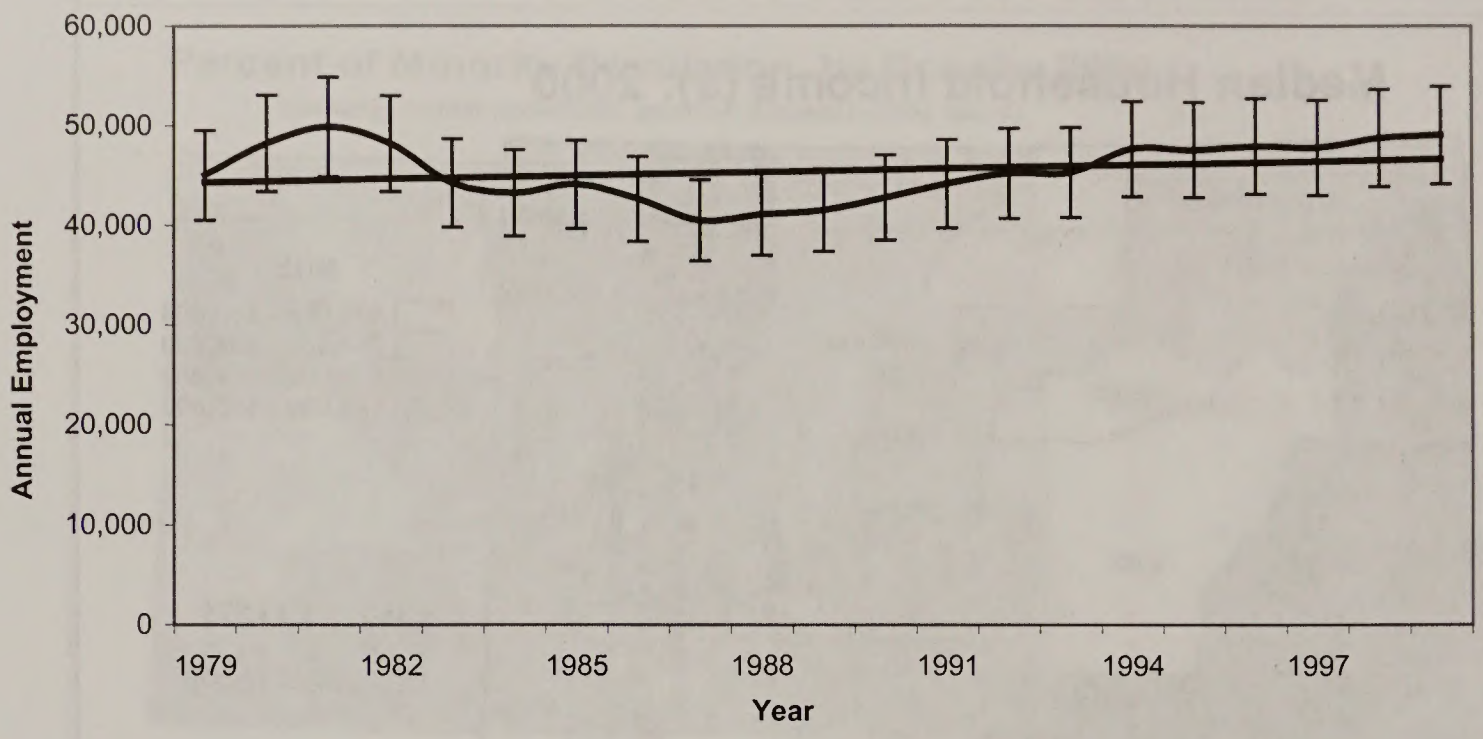


Figure 14. Total Real Earnings Trend (2001 dollars)

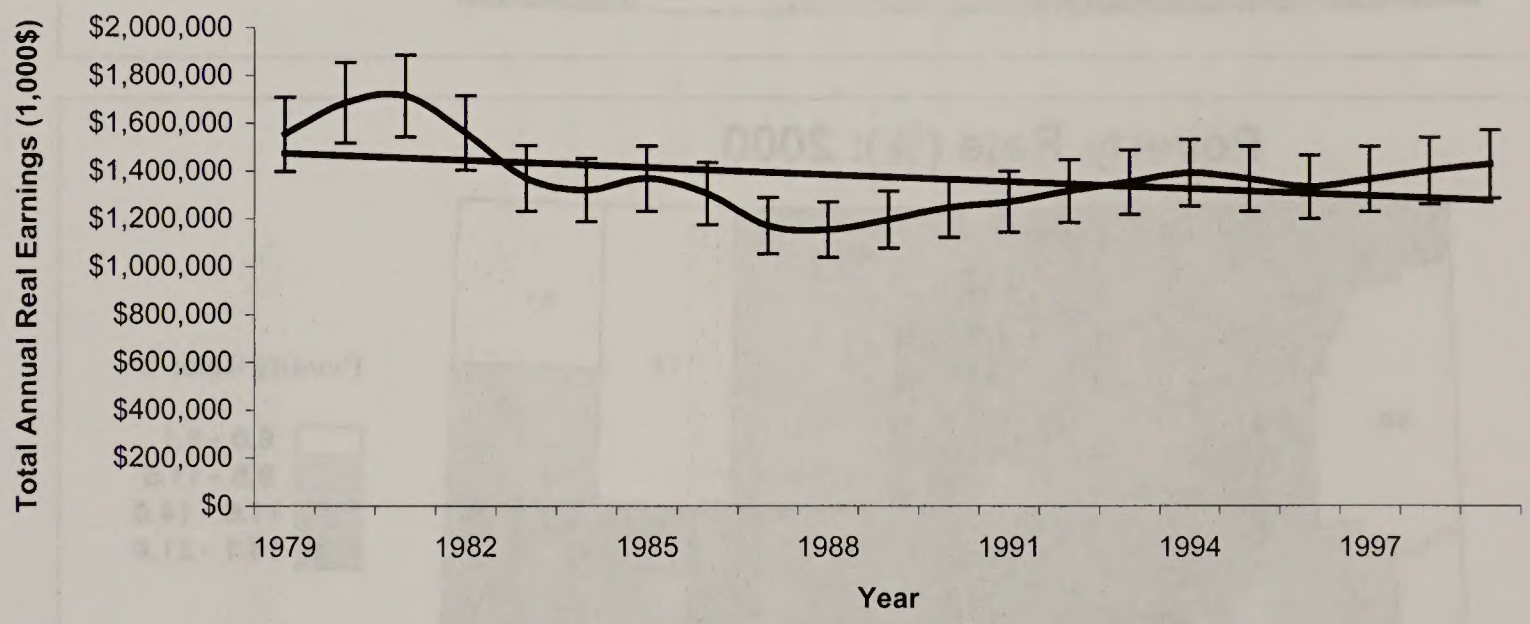


Figure 15. Estimated Ad Valorem Taxes for Natural Gas Production (2001 dollars)

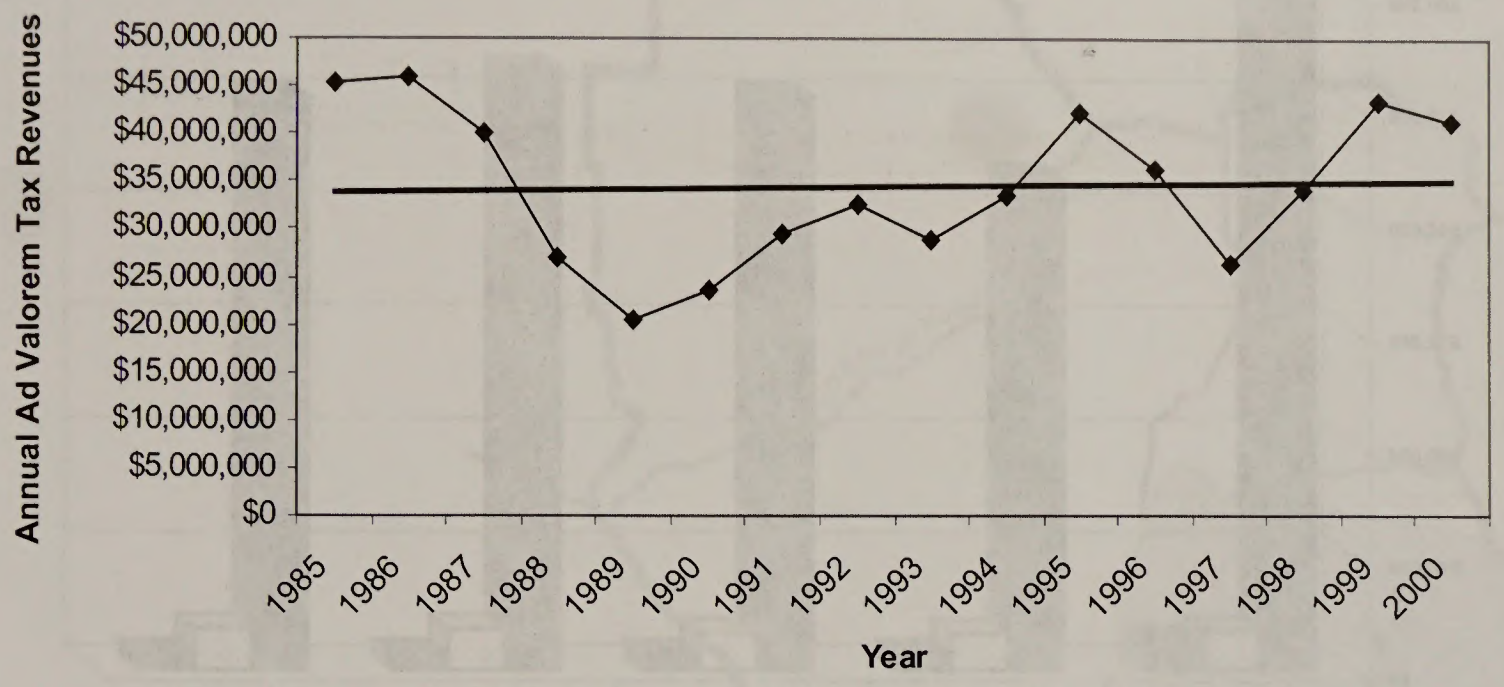
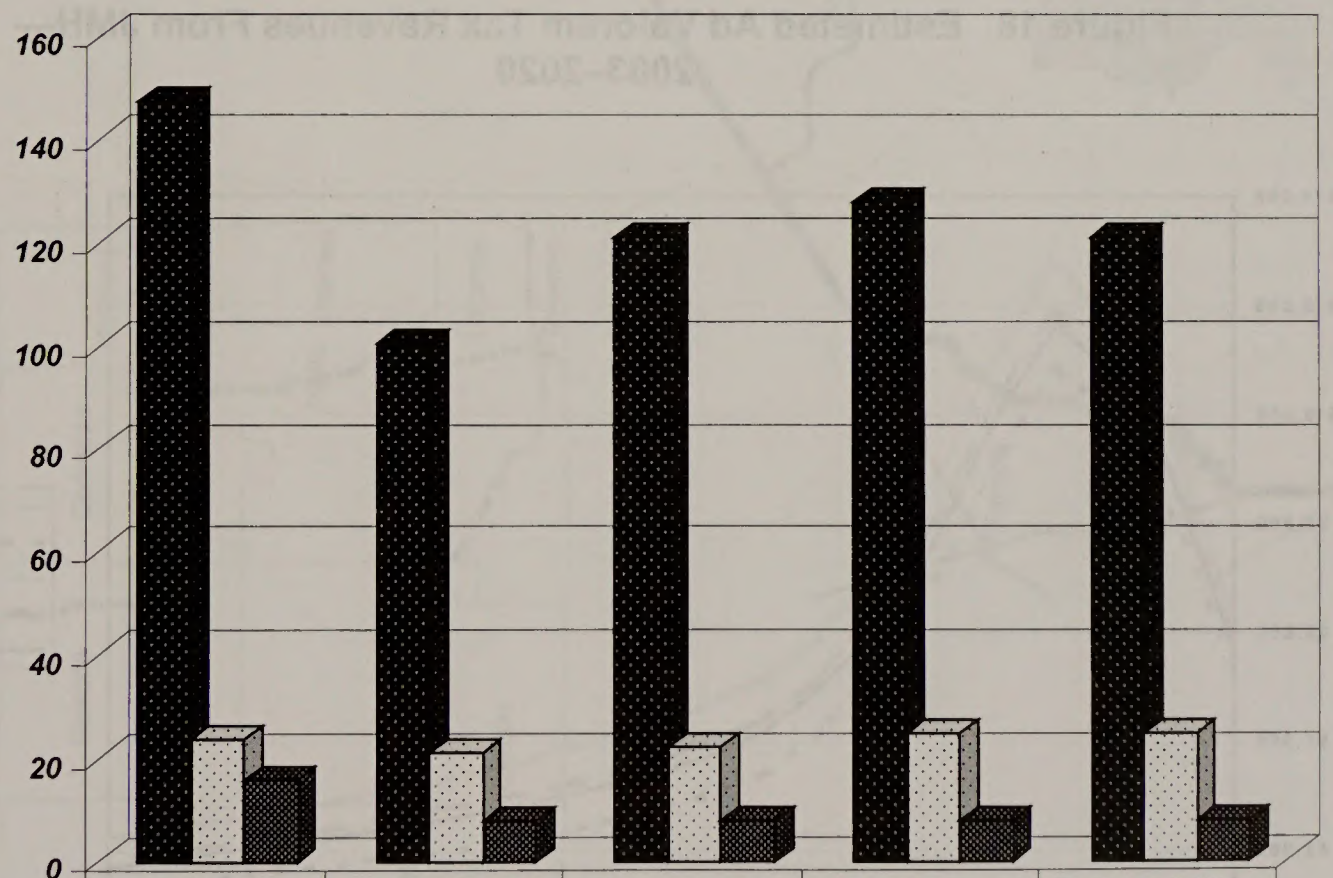
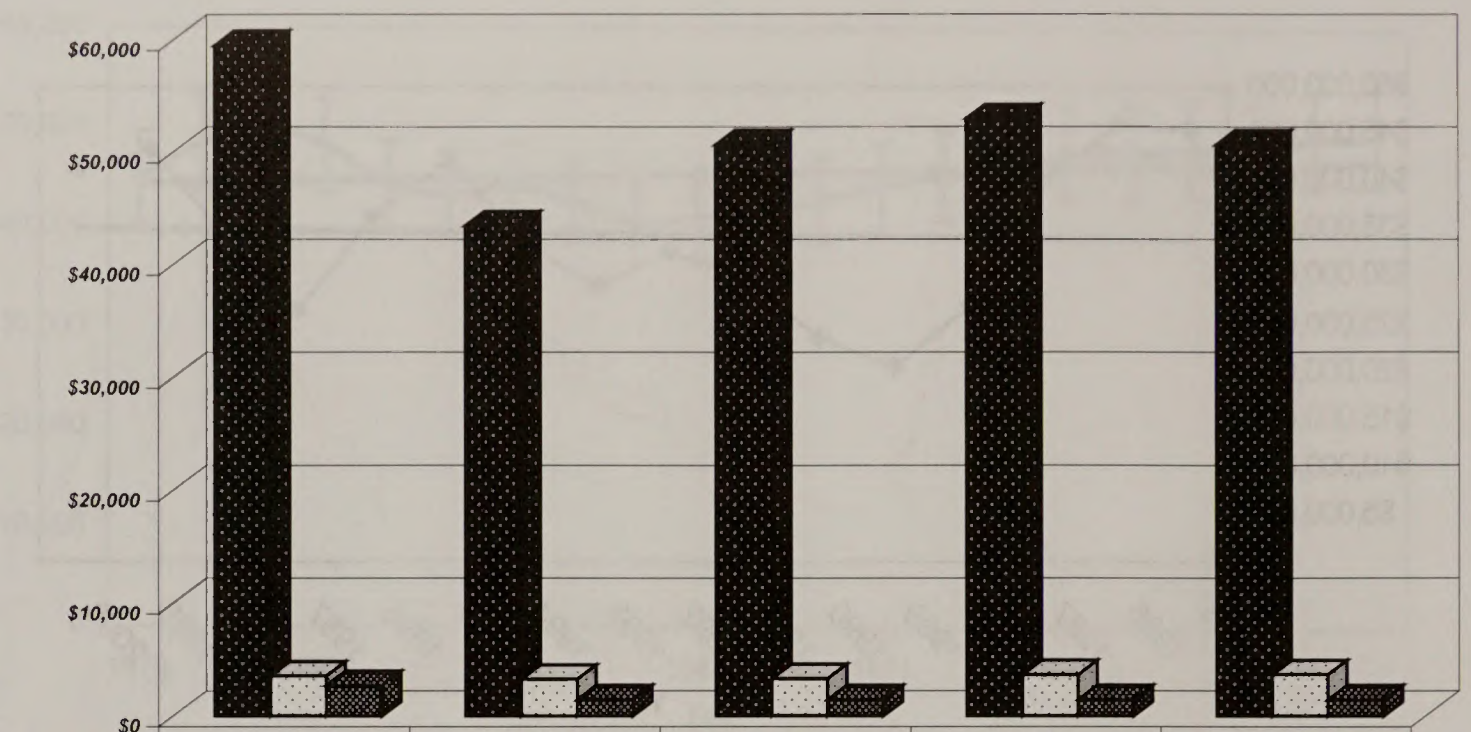


Figure 16. Average Annual Employment by Alternative



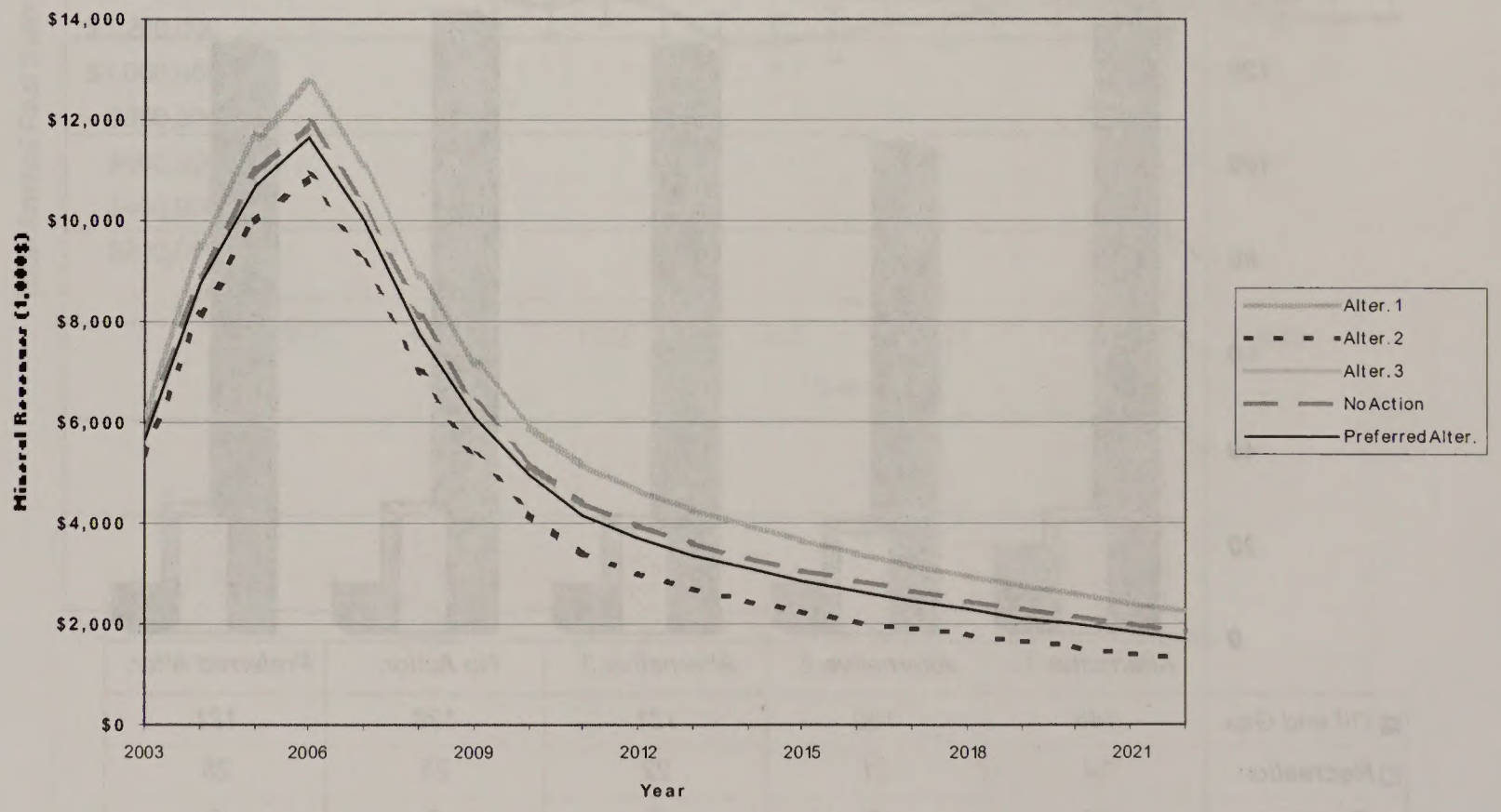
	Alternative 1	Alternative 2	Alternative 3	No Action	Preferred Alter.
Oil and Gas	148	100	121	128	121
Recreation	24	21	22	25	25
Grazing	16	8	8	8	8

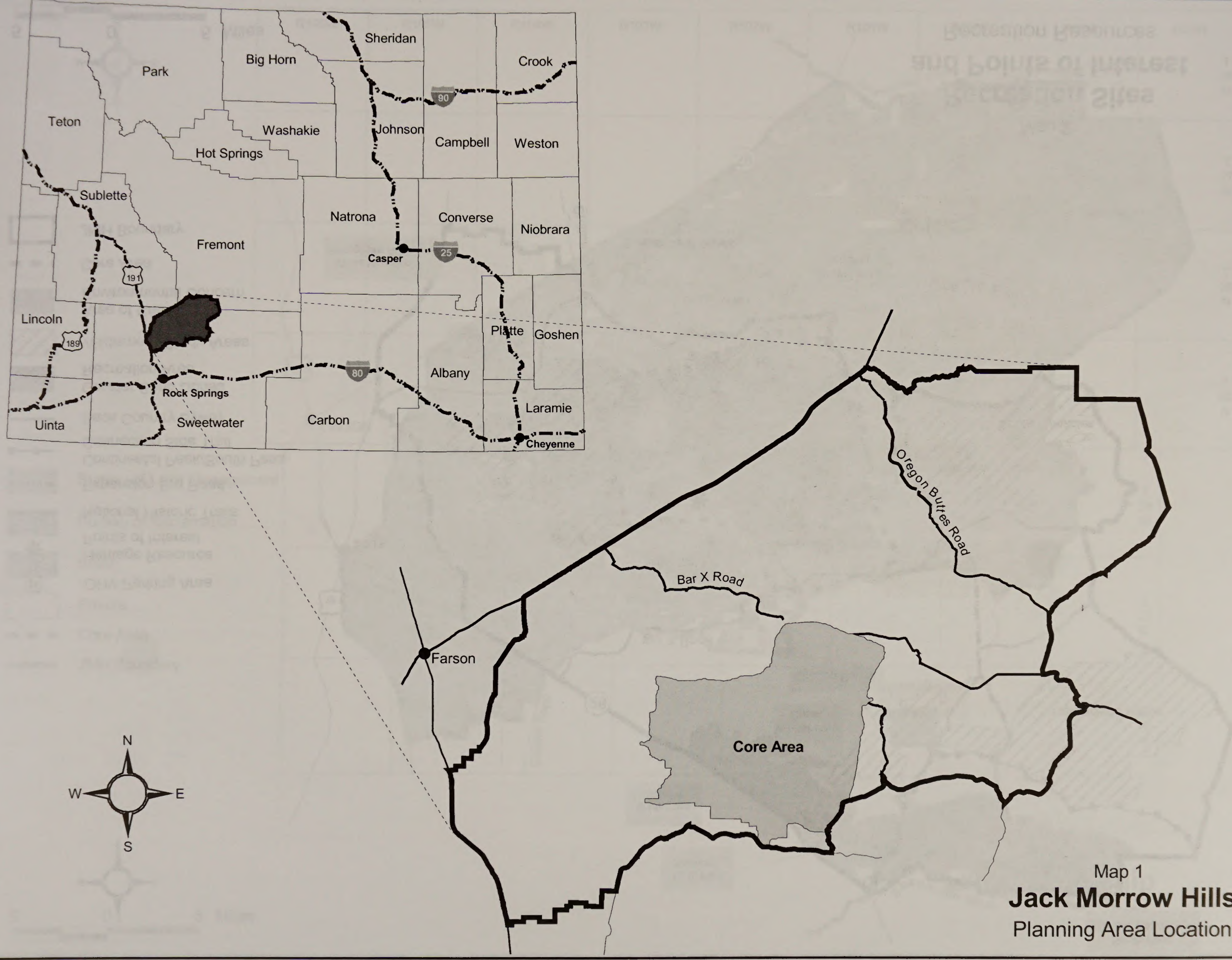
Figure 17. Total Earnings by Alternative



	Alternative 1	Alternative 2	Alternative 3	No Action	Preferred Alter.
Oil and Gas	$59,479	$43,454	$50,638	$52,944	$50,638
Recreation	$3,581	$3,260	$3,324	$3,675	$3,692
Grazing	$2,739	$1,444	$1,444	$1,444	$1,444

Figure 18. Estimated Ad Valorem Tax Revenues From JMH—2003–2020




Sheridan
Big Horn
Park
Crook
90
Teton
Washakie
Johnson
Campbell
Weston
Hot Springs
Sublette
Natrona
Converse
Niobrara
Fremont
Casper
25
191
Lincoln
189
Platte
Goshen
80
Albany
Rock Springs
Laramie
Uinta
Sweetwater
Carbon
Cheyenne
Oregon Buttes Road
Bar X Road
Farson
Core Area
N
W
E
S
Map 1
Jack Morrow Hills
Planning Area Location

N
W
E
S

South Pass Historic Landscape
Sweetwater River
South Pass Overlook
South Pass Summit
Whitehorse Creek
Honeycomb Buttes
Oregon Buttes
28
Bar X Road
191
Farson
Indian Gap
Sand Dunes
Buffalo Hump
Alkali Draw
South Pinnacles
Tri-Territory Marker
P
Boars Tusk
Crookston Ranch
Steamboat Mountain
Nine Mile Road
White Mountain Petroglyphs ACEC
Chilton Road
Greater Sand Dunes

P OHV Parking Area

* Heritage Resource Points of Interest

National Historic Trails

Expansion Era Road

Continental Peak/South Pass Connecting Side Trail

Back Country Byway

Greater Sand Dunes Recreation Area

Wilderness Study Areas

Area of Critical Environmental Concern

Core Area

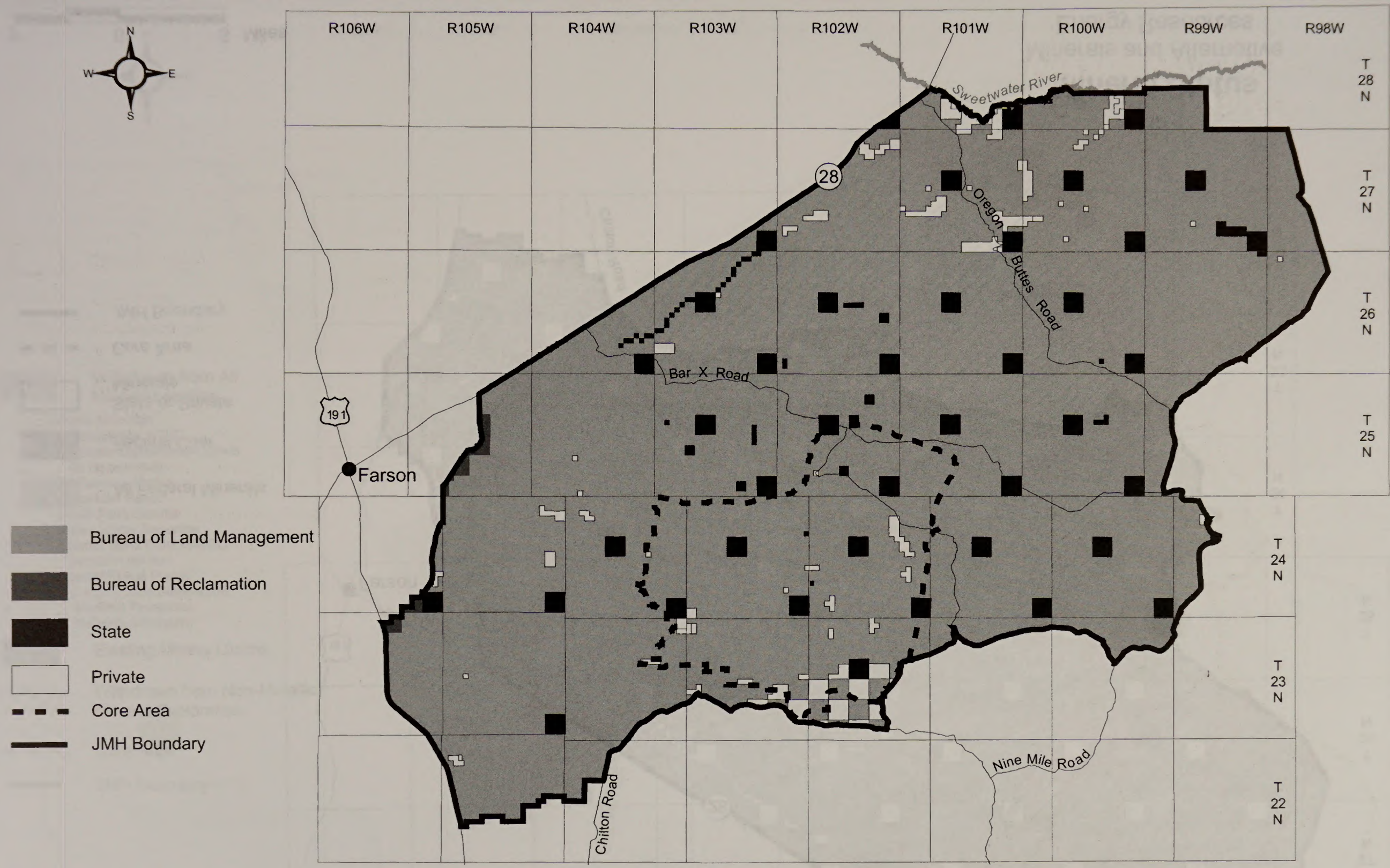
JMH Boundary

5 0 5 Miles

Map 2

Recreation Sites and Points of Interest

Recreation Resources



Map 3

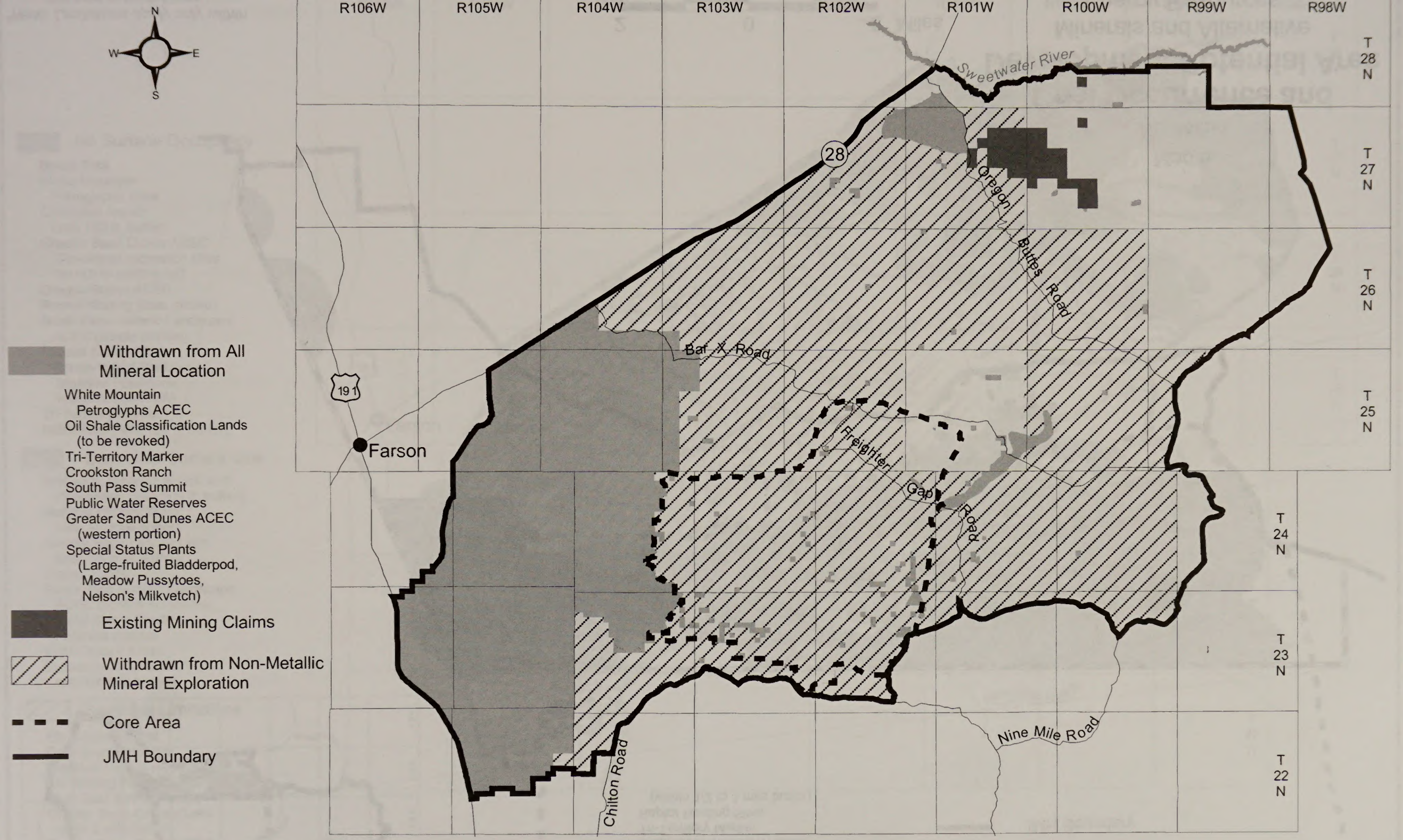
Land Ownership



Map 4

Mineral Status

Minerals and Alternative Energy Resources

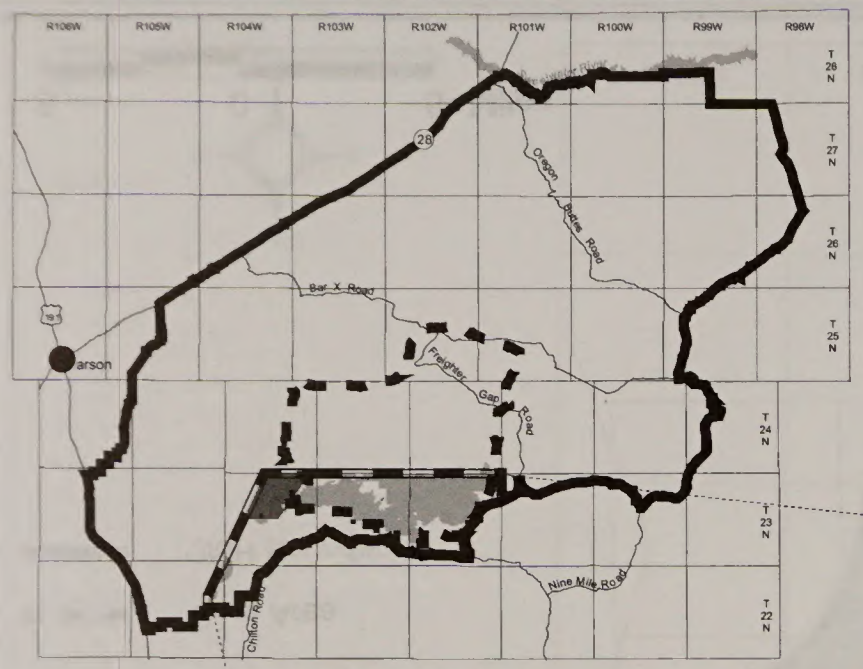


Map 5

No Action

Locatable Minerals

Minerals and Alternative Energy Resources



Closed to Coal Leases

Sand Dunes WSA
Greater Sand Dunes
ACEC (western portion)

Open to Coal Leasing with Subsurface Mining and Controls on Surface Facilities

Greater Sand Dunes
ACEC (eastern portion)
Steamboat Mountain ACEC
Tri-Territory Marker
Raptor Nesting Sites
(within 1/2 to 1 mile buffer)

Open to Coal Leasing with No Surface Occupancy

Boars Tusk
Crookston Ranch

Areas of Coal Occurrence and Development Potential

Core Area

JMH Boundary

N
W
E
S

2 0 2 Miles

*Note: Limitations apply only within the coal potential area.

Map 6

No Action

Coal Occurrence and Development Potential Area

Minerals and Alternative Energy Resources



N
W E
S

No Surface Occupancy

Boars Tusk
White Mountain
Petroglyphs Vista
Crookston Ranch
(with 100 ft. buffer)
Greater Sand Dunes ACEC
(Developed recreation sites
and OHV parking lot)
Oregon Buttes ACEC
Raptor Nesting Sites (active)
South Pass Historic Landscape
ACEC (visible portion)
Special Status Plants
(Large-fruited Bladderpod,
Meadow Pussytoes,
Nelson's Milkvetch)
Tri-Territory Marker
Indian Gap (with 100 ft. buffer)

Controlled Surface Use

Wetlands, Riparian Areas, and
Floodplains (with 500 ft. buffer)
National Historic Trails
(with 1/4 mile buffer)
Greater Sage-Grouse Leks
(with 1/4 mile buffer)
Slopes > 25%
South Pass Historic Landscape
ACEC (portion not visible)
Special Status Plants
Potential Habitat
VRM Class II Areas
Expansion Era Roads
with 1/4 mile buffer)

Seasonal Limitations

Elk Crucial Habitat
Deer Crucial Habitat
Antelope Crucial Habitat
Elk Birthing Areas
Mule Deer Birthing Areas
Greater Sage-Grouse Leks
(with 2 mile buffer)
Greater Sage-Grouse Winter
Concentration Area
Raptor Nesting Sites
(with 1/2 to 1 mile buffer)

Core Area

JMH Boundary

5 0 5 Miles

Map 7

No Action

Surface Disturbance and Seasonal Limitations

All Resource Categories

N
W
E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road
Rights-of-Way Exclusion Areas

Rights-of-Way Exclusion Areas

Tri-Territory Marker
White Mountain Petroglyphs ACEC
South Pass Historic Landscape ACEC (visible portion)

Rights-of-Way Avoidance Areas

Boars Tusk
Crookston Ranch
Greater Sage-Grouse Leks (with 1/4 mile buffer)
National Historic Trails (with 1/4 mile buffer)
Special Status Plants Potential Habitat
Special Status Plants (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Greater Sand Dunes ACEC (with 1 mile buffer)
South Pass Historic Landscape ACEC (portion not visible)
Oregon Buttes ACEC
Steamboat Mountain ACEC
Indian Gap
Expansion Era Roads (with 1/4 mile buffer)
White Mountain Petroglyphs Vista

Core Area

JMH Boundary

5 0 5 Miles

Map 8
No Action

Rights-of-Way Limitations

Travel Management, Access, and Realty

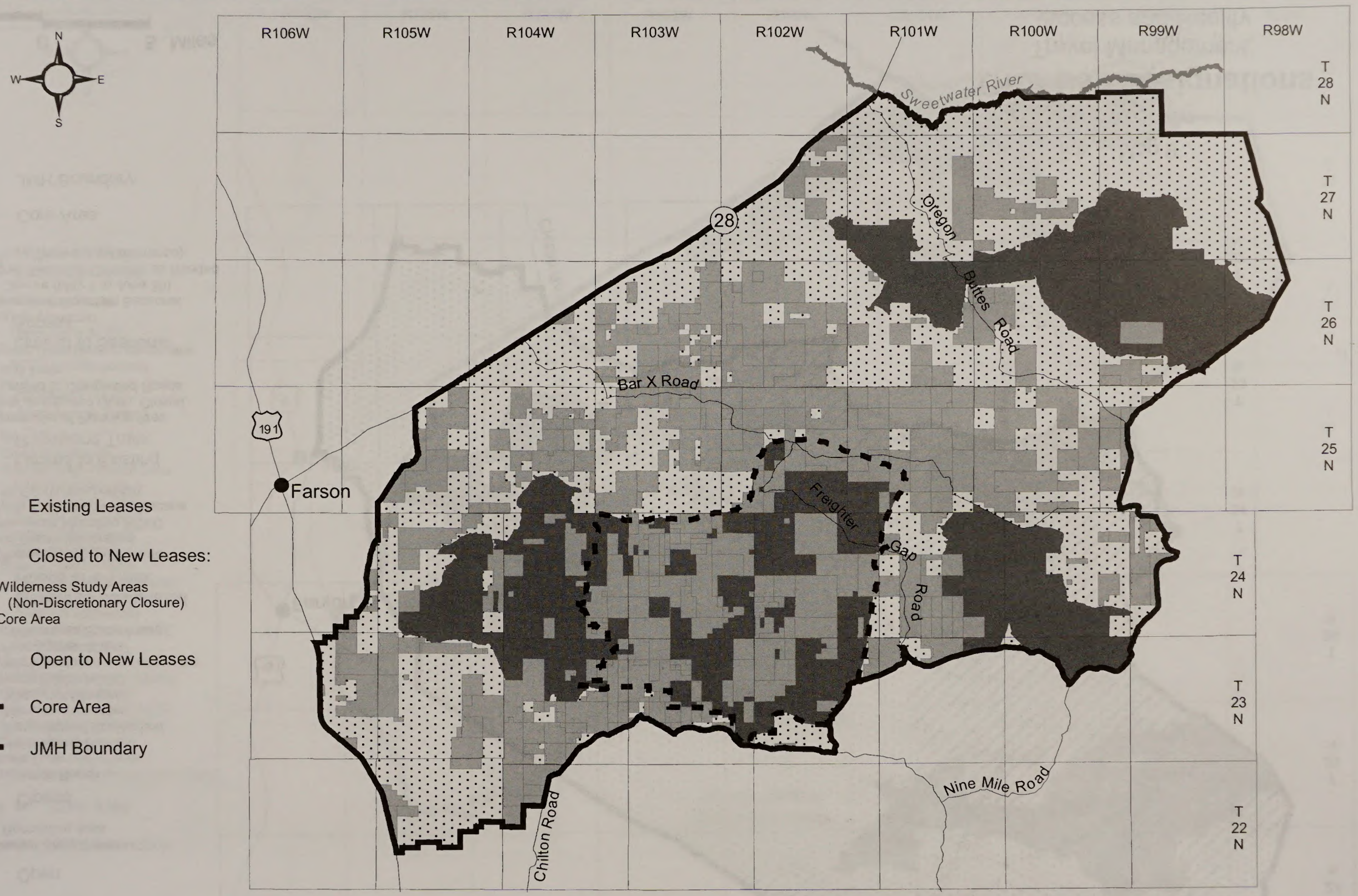


Map 9

No Action

OHV Use Designations

Travel Management, Access and Reality

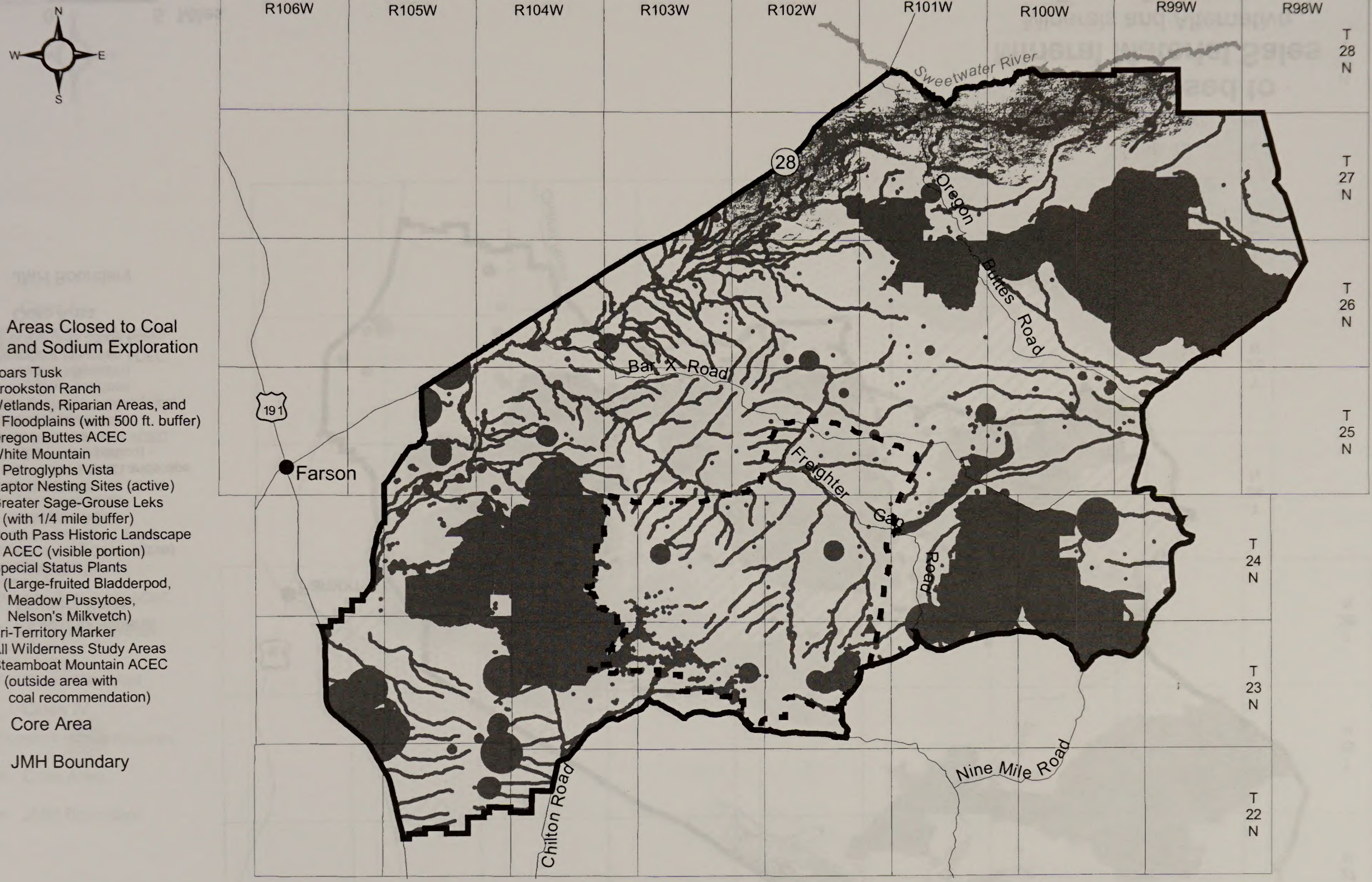


Map 10

No Action

Oil and Gas Leases

Minerals and Alternative Energy Resources



Map 11

No Action

Coal and Sodium Exploration

Minerals and Alternative Energy Resources



Map 12

No Action

Areas Closed to Mineral Material Sales

Minerals and Alternative Energy Resources

N
W
E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Nine Mile Road
Chilton Road

Class I

All Wilderness Study Areas
Oregon Buttes ACEC

Class II

Steamboat Mountain ACEC (southern portion)
Greater Sand Dunes ACEC
South Pass Historic Landscape ACEC
White Mountain Petroglyphs ACEC
Areas Adjacent to Wilderness Study Areas

Class III

Steamboat Mountain ACEC (northern portion)
Portion of White Mountain
Split Rock
Eden Valley
Red Desert Watershed

Class IV

Remainder of planning area

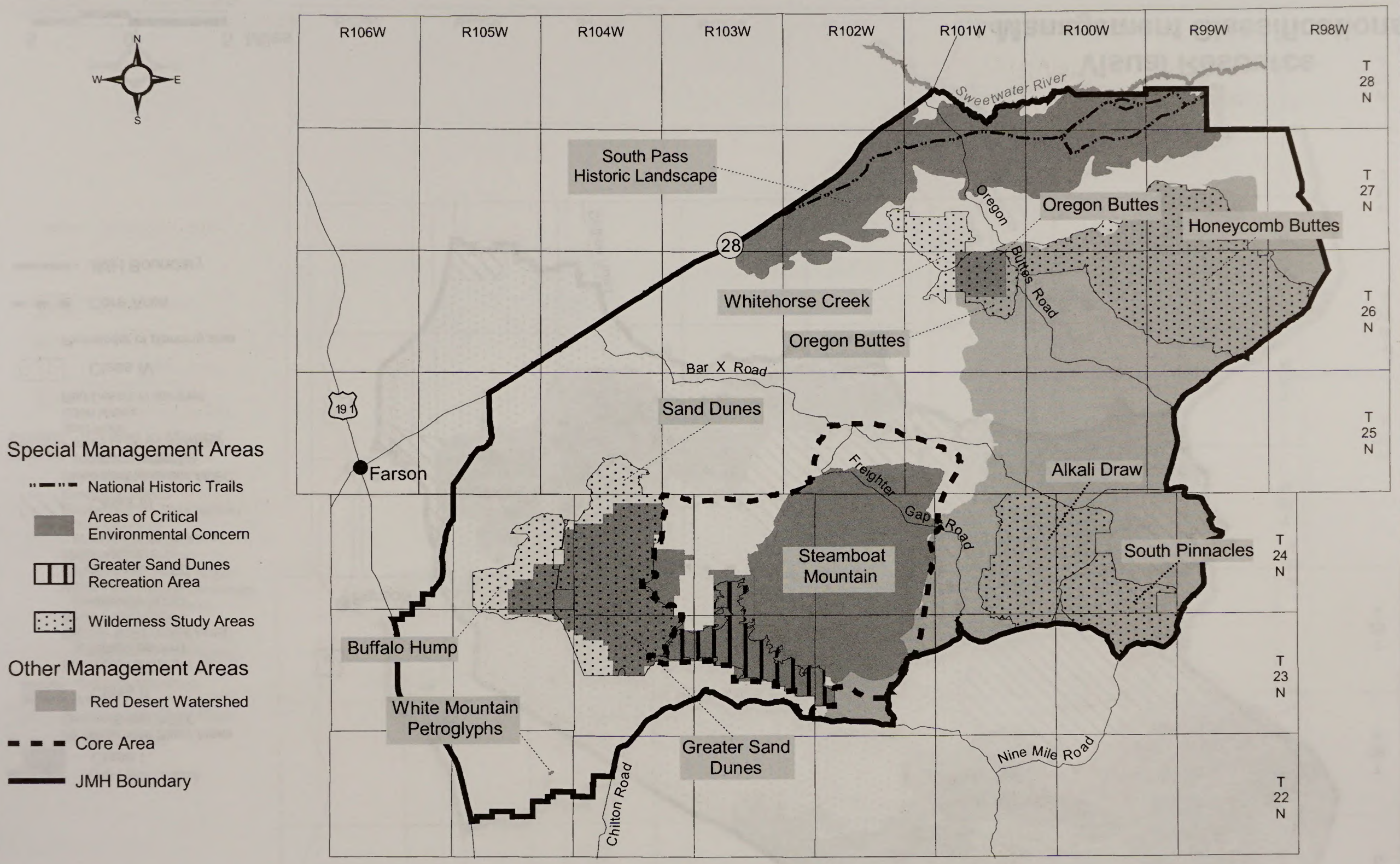
Core Area

JMH Boundary

5 0 5 Miles

Map 13
No Action

Visual Resource Management Classifications



Map 14

Special Management Areas and Other Management Areas

N
W
E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Nine Mile Road
Chilton Road

Special Status Plants

Large-fruited Bladderpod,
Meadow Pussytoes,
and Nelson's Milkvetch

Cushion Plant Community

Basin Big Sagebrush / Lemon Scurfpea

Aspen

Core Area

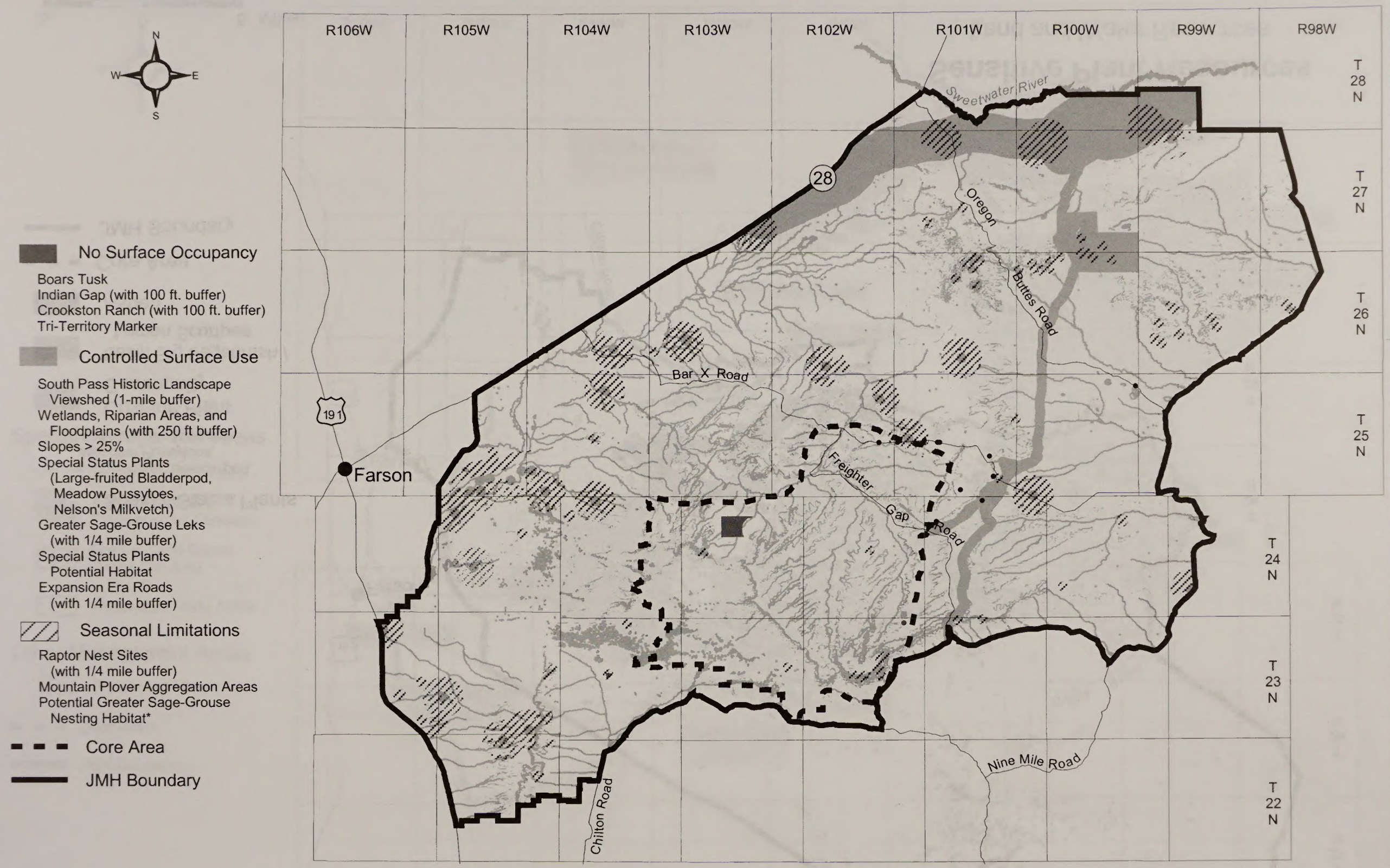
JMH Boundary

5 0 5 Miles

Map 15

Sensitive Plant Resources

Land and Water Resources



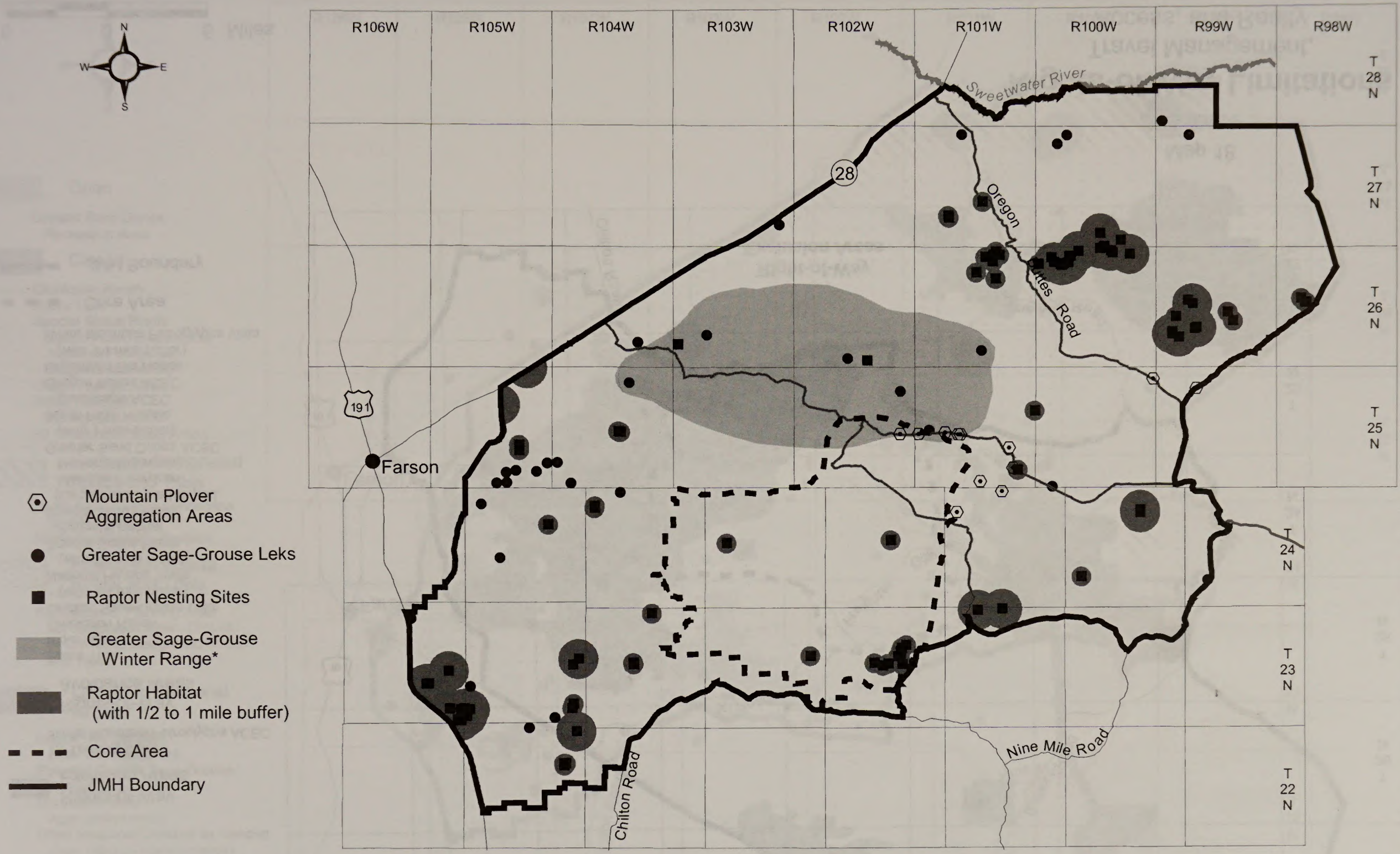
*Only 50% of the area expected to be suitable habitat

Map 16

Alternative 1

Surface Disturbance and Seasonal Limitations

All Resource Categories

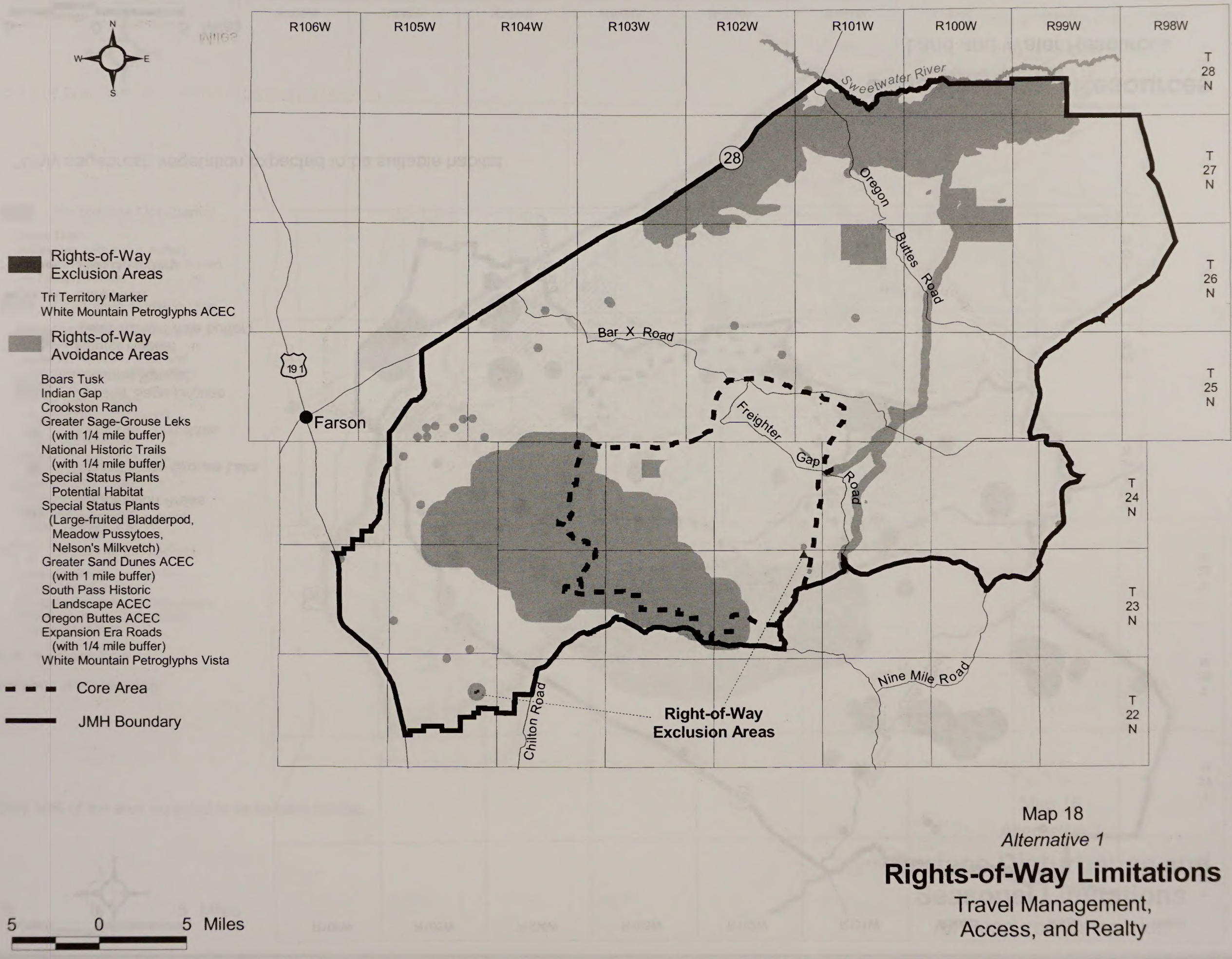


*Only sagebrush vegetation expected to be suitable habitat

Map 17

Sensitive Avian Resources

Land and Water Resources



Map 18

Alternative 1

Rights-of-Way Limitations

Travel Management, Access, and Realty

N
W E
S

Open

Greater Sand Dunes Recreation Area

Closed

Crookston Ranch
Boars Tusk
Special Status Plants (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Oregon Buttes ACEC
White Mountain Petroglyphs ACEC
All Wilderness Study Areas

Limited to Designated Roads and Trails

South Pass Historic Landscape (visible portion)
Pinnacles Geologic Feature

Limited to Existing Roads and Trails

Remainder of Planning Area not designated Open, Closed, or Limited to Designated Roads and Trails

Limited to Seasonal Access

Raptor Nesting Sites (with 1/4 mile buffer)
Potential Greater Sage-Grouse Nesting Habitat*
Mountain Plover Aggregation Areas
Other Seasonal Closures as Needed (See Table 2-3 for reference)

Core Area

JMH Boundary

*Only 50% of the area is expected to be suitable nesting habitat.

5 0 5 Miles

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

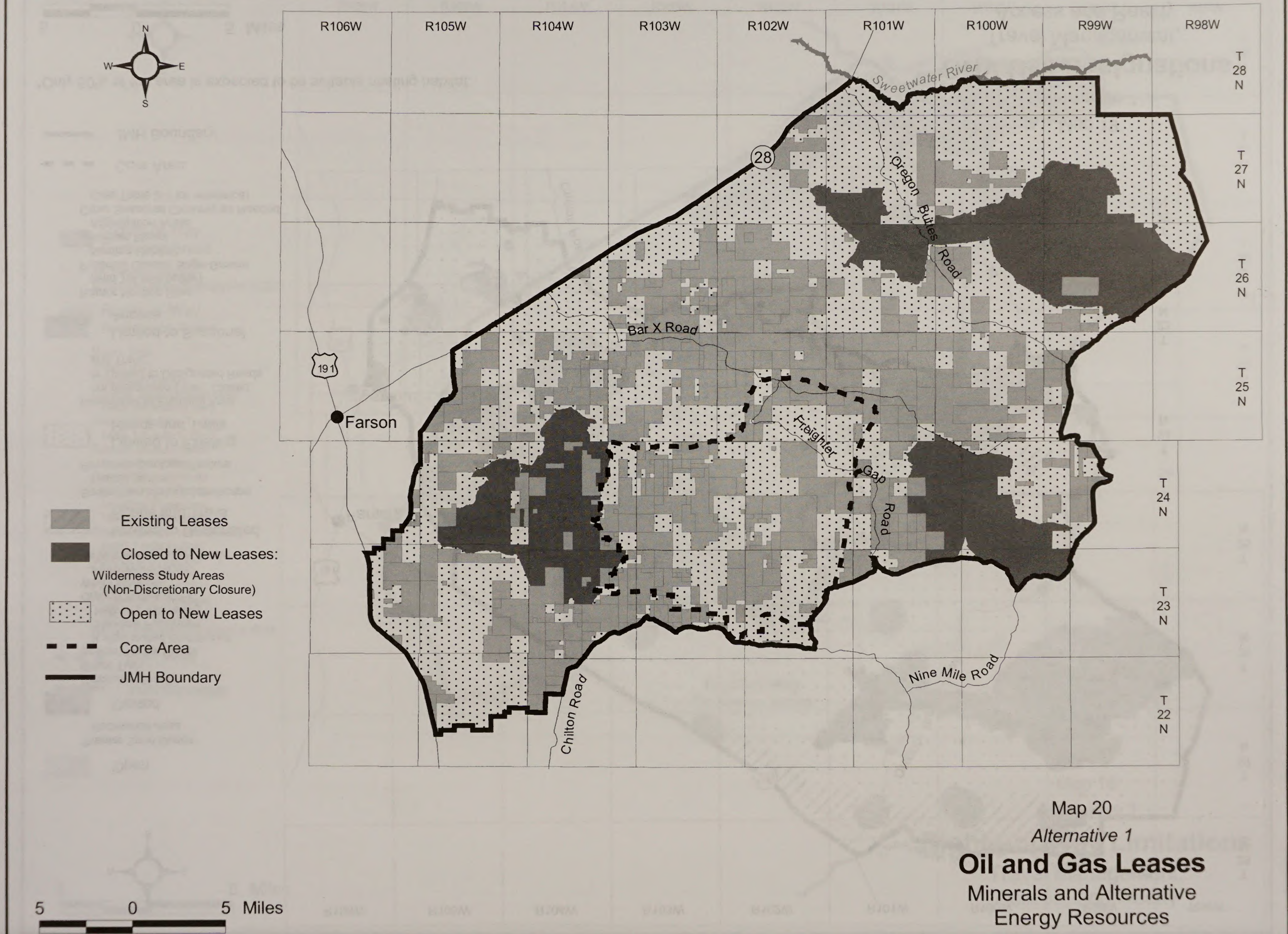
Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road

Map 19

Alternative 1

OHV Use Designations

Travel Management, Access and Reality



Map 20

Alternative 1

Oil and Gas Leases

Minerals and Alternative Energy Resources

N
W E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Chilton Road
Nine Mile Road

Areas Closed to Coal and Sodium Exploration

All Wilderness Study Areas
Boars Tusk
Tri-Territory Marker
Crookston Ranch

Core Area

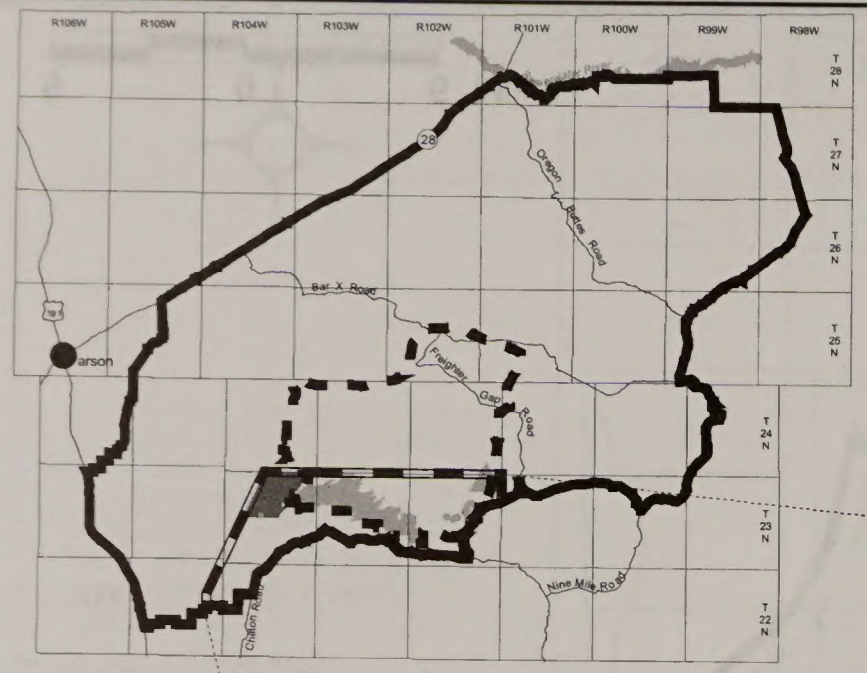
JMH Boundary

5 0 5 Miles

Map 21
Alternative 1

Coal and Sodium Exploration

Minerals and Alternative Energy Resources



Closed to Coal Leasing

Sand Dunes WSA
Greater Sand Dunes
ACEC (western portion)

Open to Coal Leasing with Subsurface Mining and Controls on Surface Facilities

Greater Sand Dunes
ACEC (eastern portion)
Tri-Territory Marker
Raptor Nesting Sites
(with 1/4 mile buffer)

Open to Coal Leasing with No Surface Occupancy

Boars Tusk
Crookston Ranch

Area of Coal Occurrence and Development Potential

Core Area

JMH Boundary

N
W
E
S

2 0 2 Miles

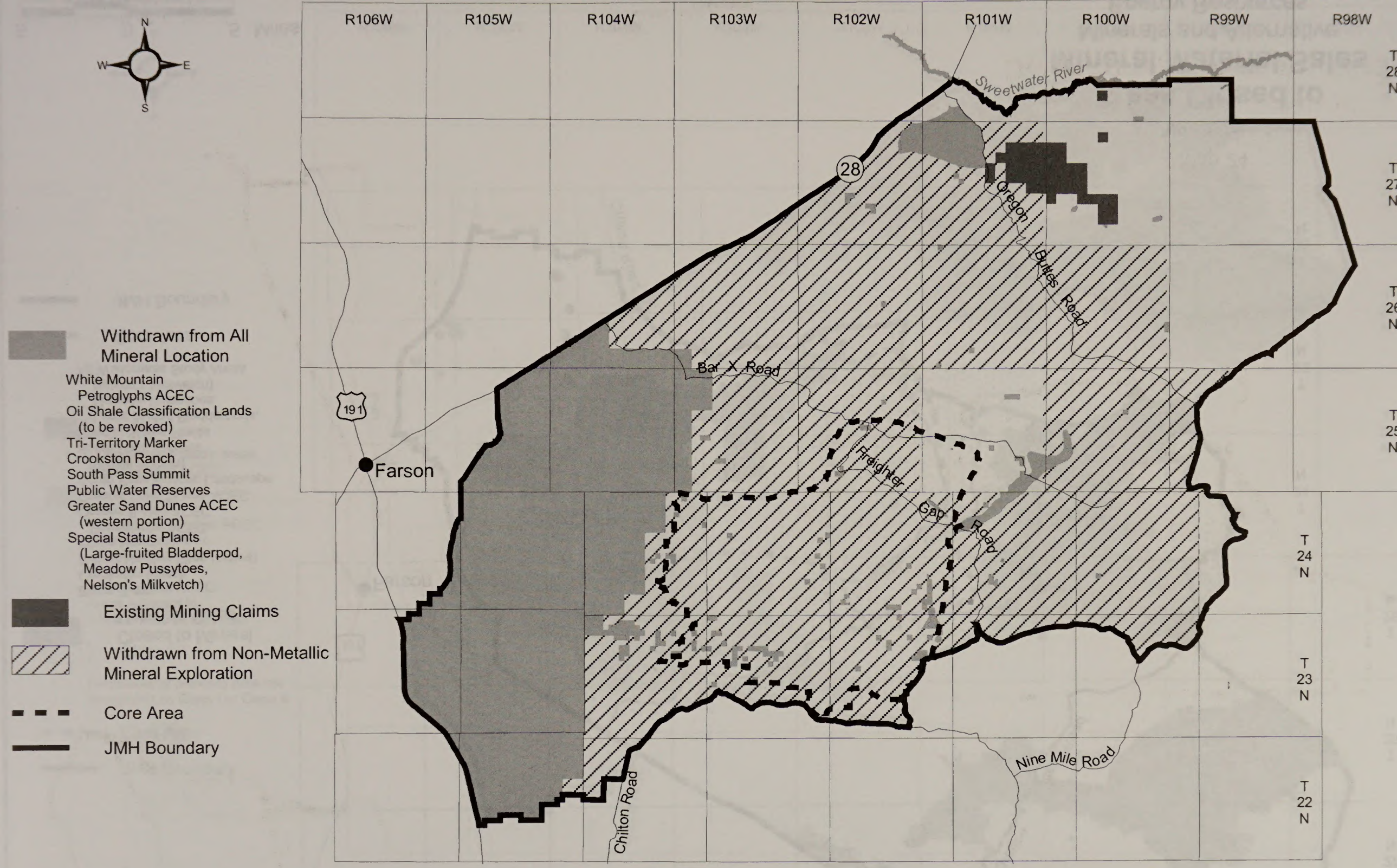
*Note: Limitations apply only within the coal potential area.

Map 22

Alternative 1

Coal Occurrence and Development Potential Area

Minerals and Alternative Energy Resources



Map 23

Alternative 1

Locatable Minerals

Minerals and Alternative Energy Resources



Map 24

Alternative 1

Areas Closed to Mineral Material Sales

Minerals and Alternative Energy Resources

N
W E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
Oregon Buttes Road
Bar X Road
Freighter Gap Road
Nine Mile Road
Chilton Road
28
191
Farson

Class I
All Wilderness Study Areas
Oregon Buttes ACEC

Class II
Greater Sand Dunes ACEC
South Pass Historic Landscape ACEC
White Mountain Petroglyphs ACEC
Areas Adjacent to Wilderness Study Areas

Class IV
Remainder of planning area not designated as Class I or Class II

Core Area

JMH Boundary

5 0 5 Miles

Map 25
Alternative 1

Visual Resource Management Classifications

N
W
E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

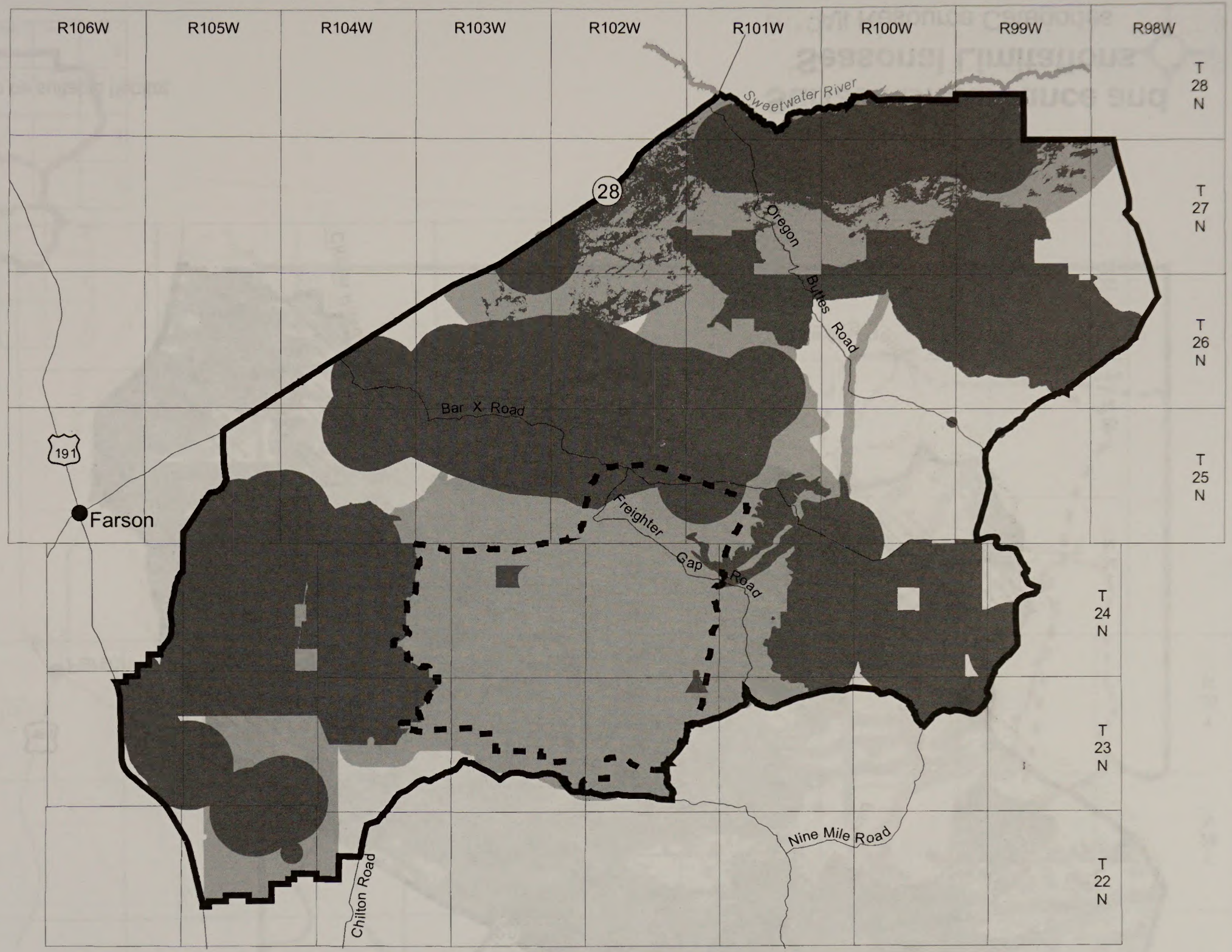
Sweetwater River
Oregon Buttes Road
28
Bar X Road
191
Farson
Chilton Road
Nine Mile Road

Existing Areas of Critical Environmental Concern
Designation Removed
Steamboat Mountain ACEC
Wilderness Study Areas
Core Area
JMH Boundary

5 0 5 Miles

Map 26
Alternative 1

Special Management Areas and Other Management Areas



N
W E
S

Rights-of-Way Exclusion Areas

- Greater Sage-Grouse Concentration Areas
- Special Status Plants ACEC (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
- Special Status Plants Potential Habitat
- South Pass Historic Landscape (visible portion)
- Greater Sage-Grouse Winter Range*
- Oregon Buttes ACEC
- Indian Gap
- Tri-Territory Marker
- White Mountain Petroglyphs Vista
- Paleosol Deposition Area (Greater Sand Dunes ACEC)
- All Wilderness Study Areas
- Mountain Plover Aggregation Areas (with 1/4 mile buffer)
- Cushion Plant Community ACEC
- Pinnacles Geographic Area
- Pinnacles Geologic Feature ACEC

Rights-of-Way Avoidance Areas

- Boars Tusk Connectivity Area
- Crookston Ranch
- National Historic Trails (with 1/4 mile buffer)
- Expansion Era Roads (with 1/4 mile buffer)
- South Pass Historic Landscape (portion not visible)
- Steamboat Mountain ACEC
- Greater Sand Dunes ACEC (with 1 mile buffer)

Core Area

JMH Boundary

*Only sagebrush vegetation expected to be suitable habitat

5 0 5 Miles

Map 27

Alternative 2

Rights-of-Way Limitations

Travel Management, Access, and Realty



N
W E
S

No Surface Occupancy

Boars Tusk
Indian Gap (with 100 ft. buffer)
Slopes > 20%
Greater Sage-Grouse Concentration Areas
Elk Birthing Areas
Mule Deer Birthing Areas
Raptor Nest Sites (with 1/2 to 1 mile buffer)
Greater Sage-Grouse Winter Range*
Tri-Territory Marker
White Mountain Petroglyphs Vista
Cushion Plant Community ACEC
Crookston Ranch (with 300 ft. buffer)
Greater Sand Dunes ACEC + Expansion
Oregon Buttes ACEC
South Pass Historic Landscape (visible portion)
Special Status Plants ACEC (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Special Status Plants Potential Habitat

Controlled Surface Use

Wetlands, Riparian Areas, and Floodplains (with 1/4 mile buffer)
Steamboat Mountain Crucial Overlap
Steamboat Mountain ACEC + Expansion
National Historic Trails (with 1/4 mile buffer)
Expansion Era Roads (with 1/4 mile buffer)
South Pass Historic Landscape (portion not visible)

Seasonal Limitations

Elk Crucial Habitat
Antelope Crucial Habitat
Mule Deer Crucial Habitat
Mountain Plover Aggregation Areas (with 1/4 mile buffer)

Core Area

JMH Boundary

*Only sagebrush vegetation expected to be suitable habitat

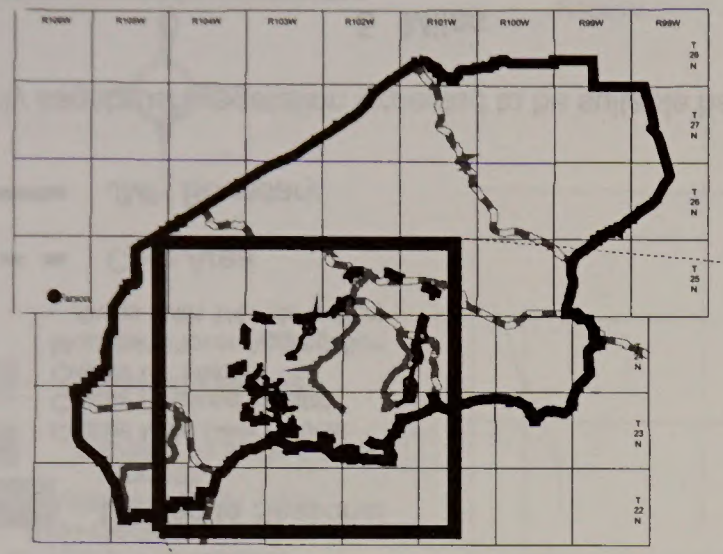
5 0 5 Miles

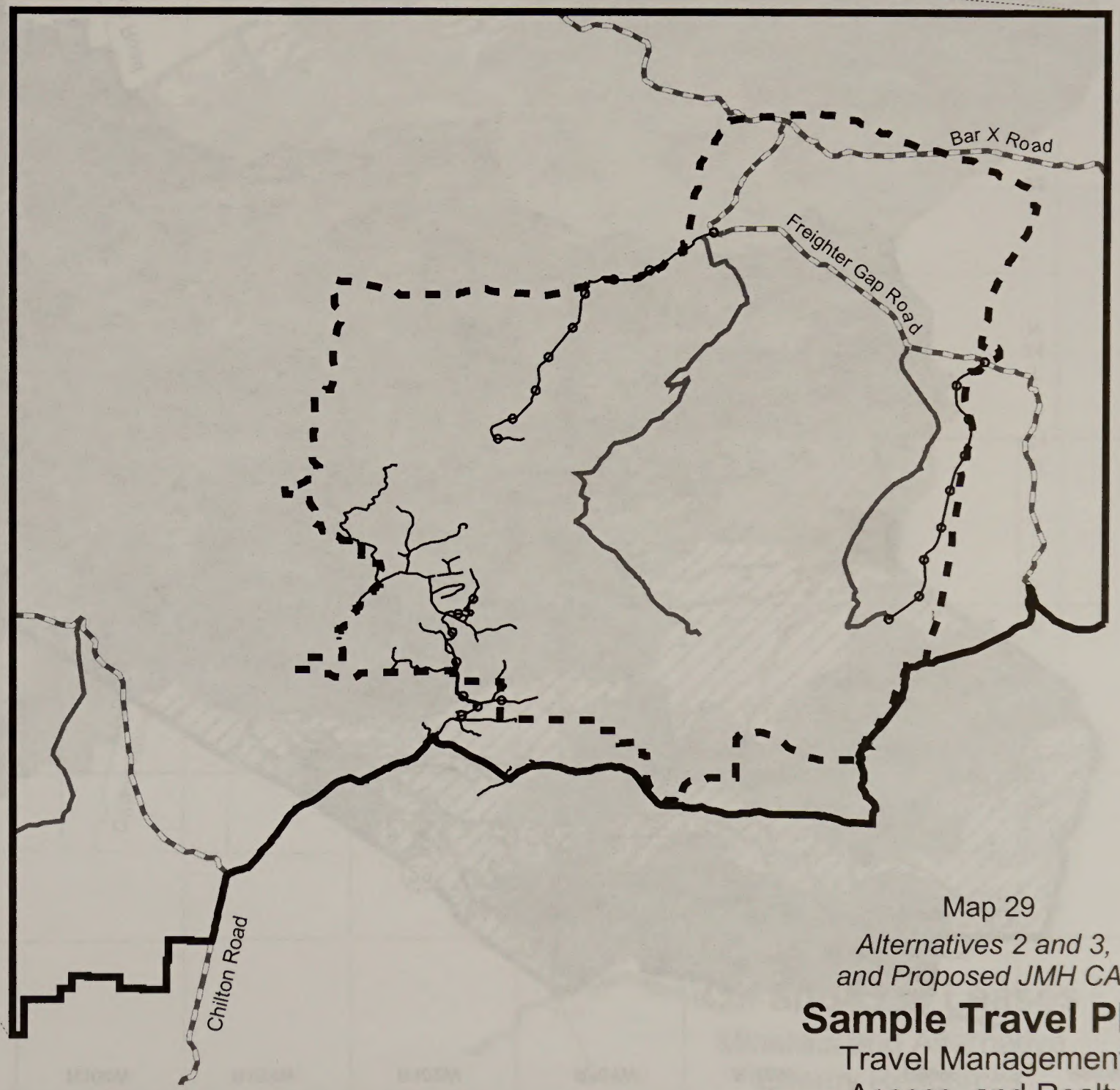
Map 28

Alternative 2

Surface Disturbance and Seasonal Limitations

All Resource Categories





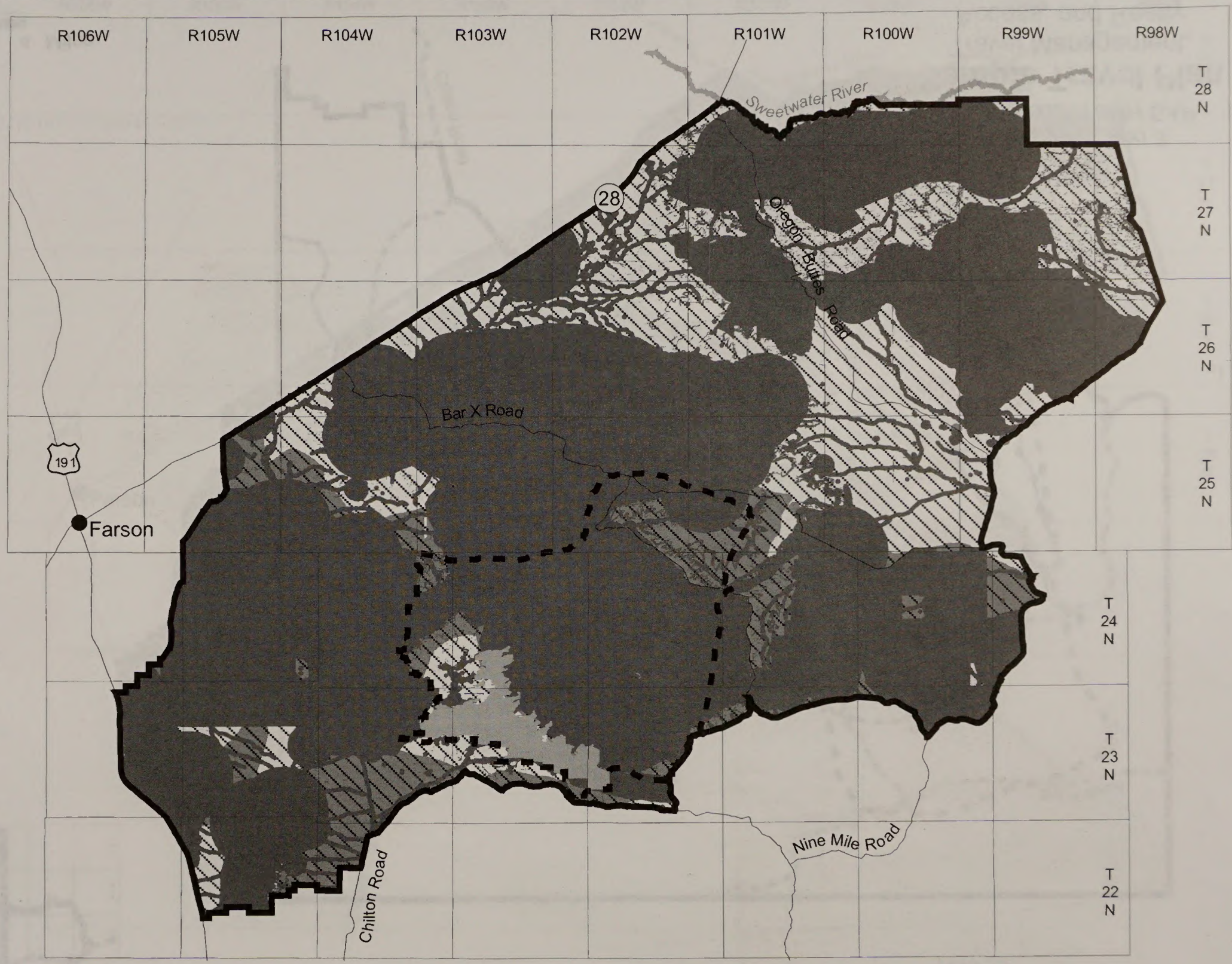
N
W
E
S

Resource Road
Local Road
Collector Road
Arterial Road
Core Area
JMH Boundary

4 0 4 Miles

Map 29
Alternatives 2 and 3, and Proposed JMH CAP

Sample Travel Plan
Travel Management, Access, and Realty



N
W E
S

Open

Greater Sand Dunes Recreation Area

Closed

Boars Tusk
Oregon Buttes ACEC
White Mountain Petroglyphs ACEC
Raptor Nest Sites (with 1/2 to 1 mile buffer)
Paleosol Deposition Area
All Wilderness Study Areas
Slopes > 20%
Geologic Hazards
Special Status Plants ACEC (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Greater Sage-Grouse Concentration Areas
Elk Birthing Areas
Mule Deer Birthing Areas
Wetlands, Riparian Areas, and Floodplains (with 500 ft. buffer)
Pinnacles Geographic Area
Pinnacles Geologic Feature ACEC
Crookston Ranch
Greater Sage-Grouse Winter Range*

Limited to Designated Roads and Trails

Remainder of Planning Area not designated Open or Closed

Limited to Seasonal Access

Crucial Mule Deer Habitat
Crucial Antelope Habitat
Crucial Elk Habitat
Mountain Plover Aggregation Areas (with 1/4 mile buffer)

Core Area

JMH Boundary

*Only sagebrush vegetation expected to be suitable habitat

5 0 5 Miles

Map 30
Alternative 2

OHV Use Designations

Travel Management, Access and Reality



R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
Oregon Buttes Road
28
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road

Existing Leases

Closed to New Leases:

All Wilderness Study Areas
(Non-Discretionary Closure)
All ACECs + Expansions
Red Desert Watershed
Wetlands, Riparian Areas, and
Floodplains (with 500 ft. buffer)
Expansion Era Roads
(with 1/4 mile buffer)
National Historic Trails
(with 1/4 mile buffer)
Slopes > 20%
Special Status Plants ACEC
(Large-fruited Bladderpod,
Meadow Pussytoes,
Nelson's Milkvetch)
Greater Sage-Grouse
Concentration Areas
Antelope Crucial Habitat
Elk Birthing Areas
Elk Crucial Habitat
Mule Deer Birthing Areas
Mule Deer Crucial Habitat
Raptor Nest Sites
(with 1/2 to 1 mile buffer)
Mountain Plover
Aggregation Areas
Connectivity Area
Greater Sage-Grouse
Winter Range*
Pinnacles Geographic Area
Tri-Territory Marker

Open to New Leases

Core Area

JMH Boundary

*Only sagebrush vegetation expected to be suitable habitat

5 0 5 Miles

Map 31

Alternative 2

Oil and Gas Leases

Minerals and Alternative
Energy Resources



Map 32

Alternative 2

Coal and Sodium Exploration

Minerals and Alternative Energy Resources





Closed to Coal Leasing

Area of Coal Occurrence and Development Potential Area

Core Area

JMH Boundary

2 0 2 Miles

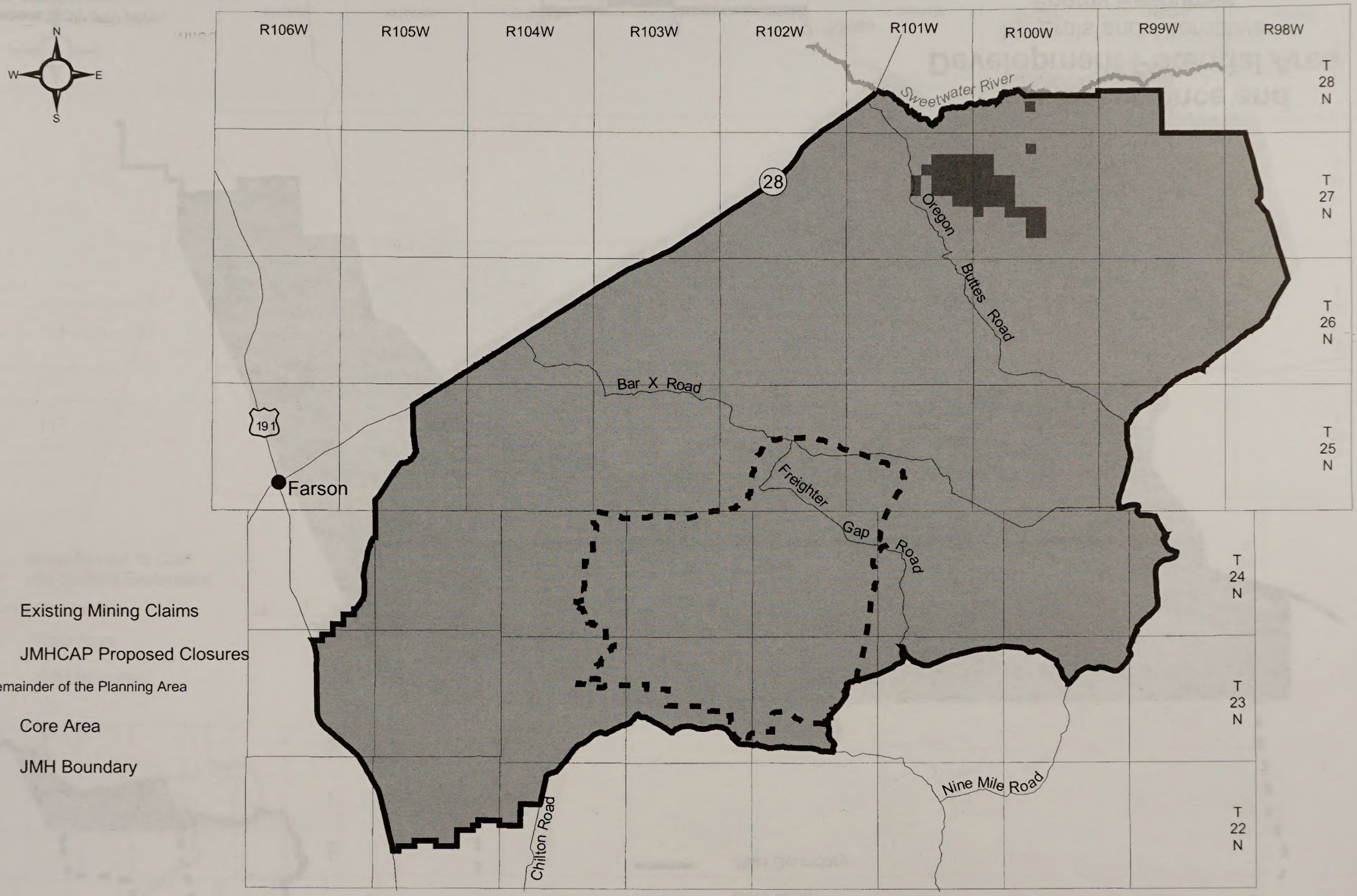
*Note: Limitations apply only within the coal potential area.

Map 33

Alternative 2

Coal Occurrence and Development Potential Area

Minerals and Alternative Energy Resources



Map 34

Alternative 2

Locatable Minerals

Minerals and Alternative Energy Resources



R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road

Closed to Mineral Material Sales
Entire Planning Area
Core Area
JMH Boundary

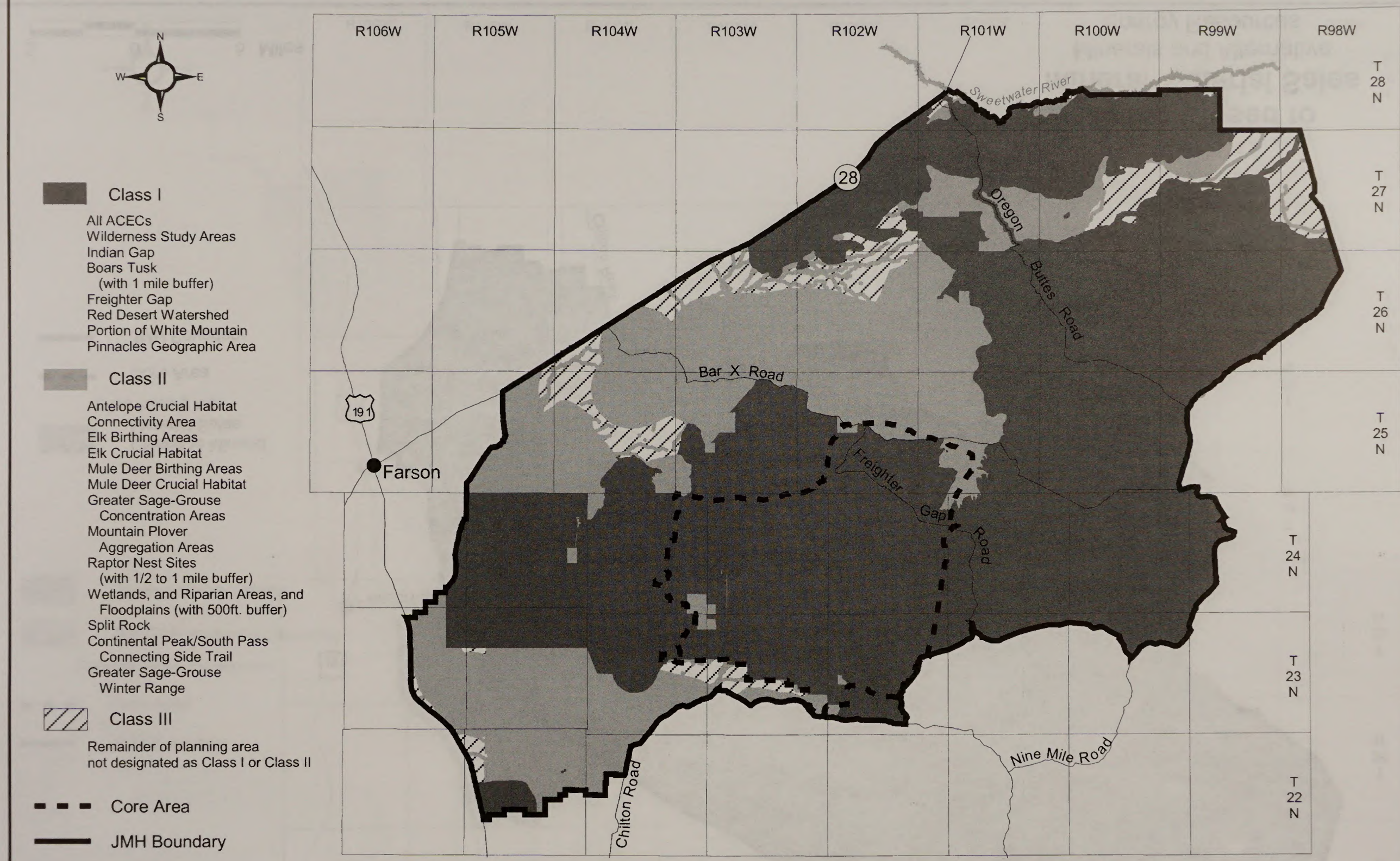
5 0 5 Miles

Map 35

Alternative 2

Areas Closed to Mineral Material Sales

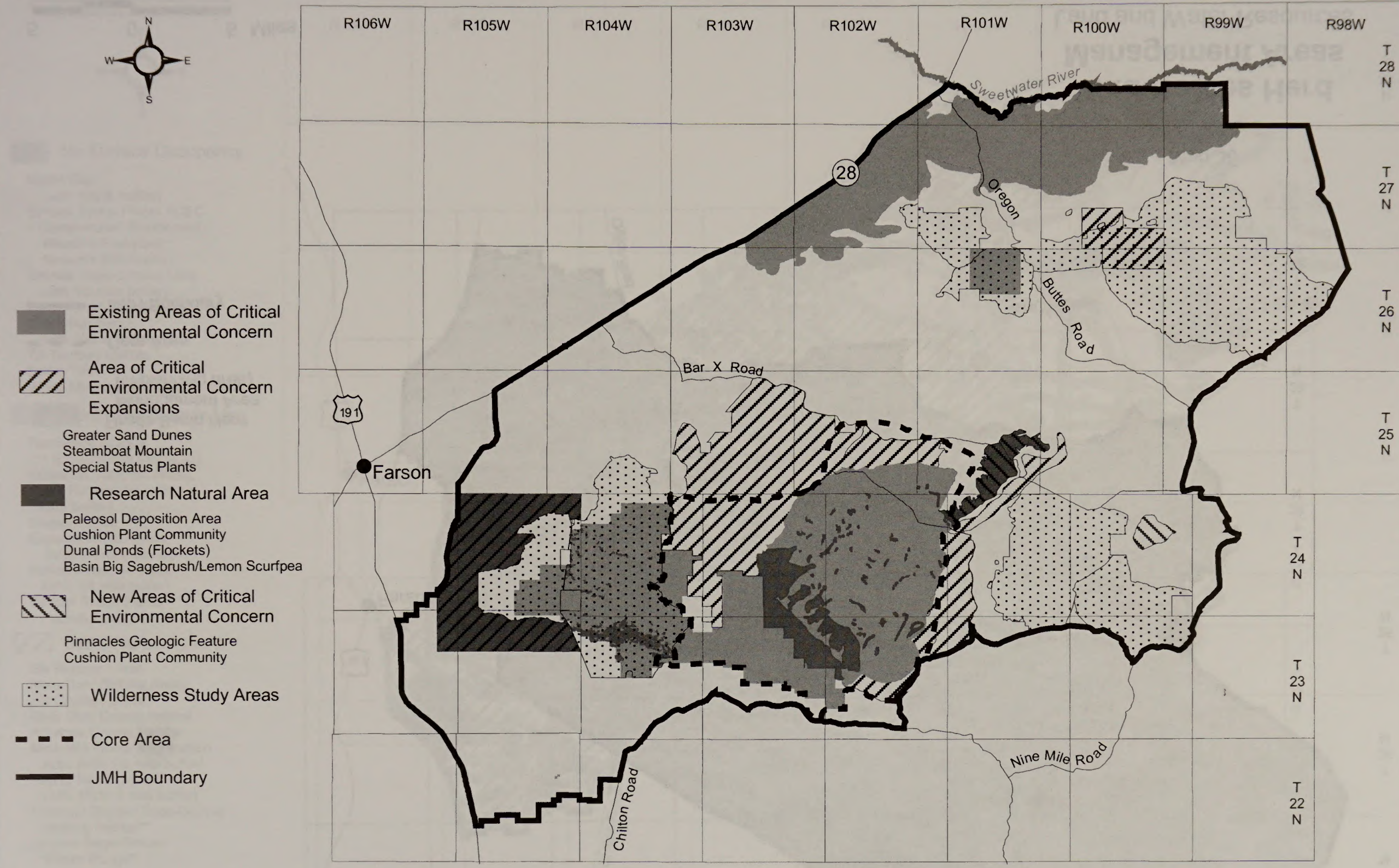
Minerals and Alternative Energy Resources



Map 36

Alternative 2

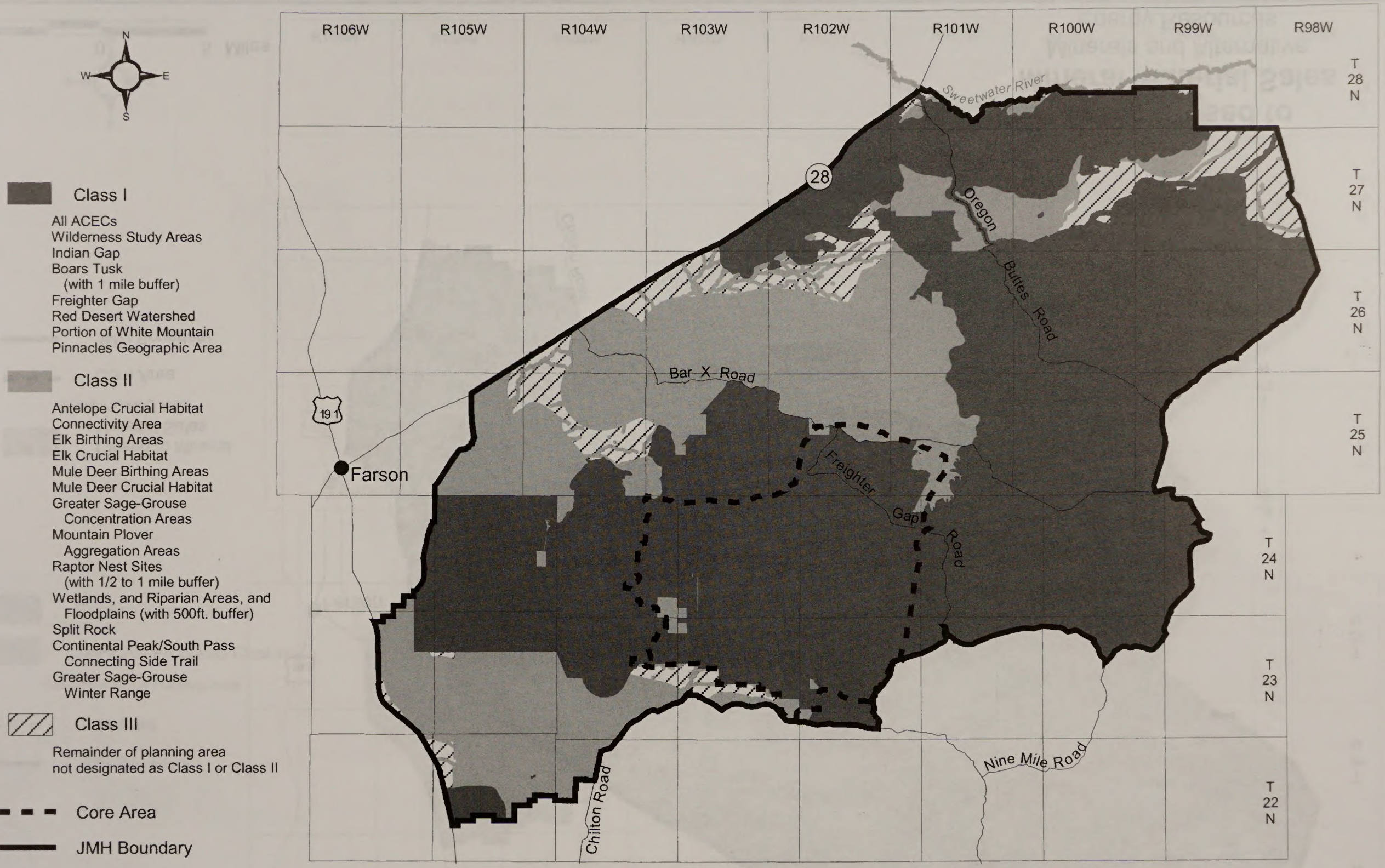
Visual Resource Management Classifications



Map 37

Alternative 2

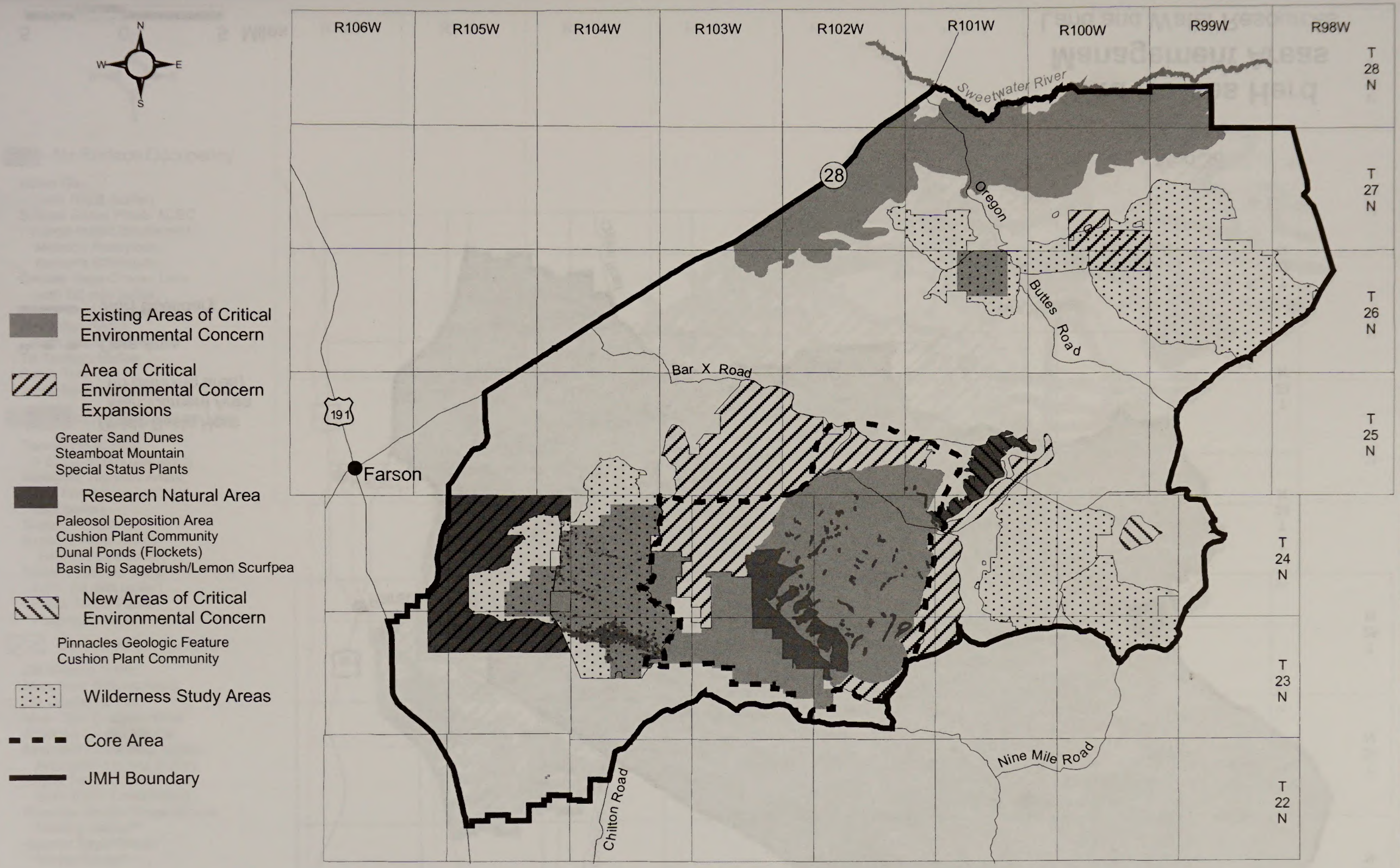
Special Management Areas and Other Management Areas



Map 36

Alternative 2

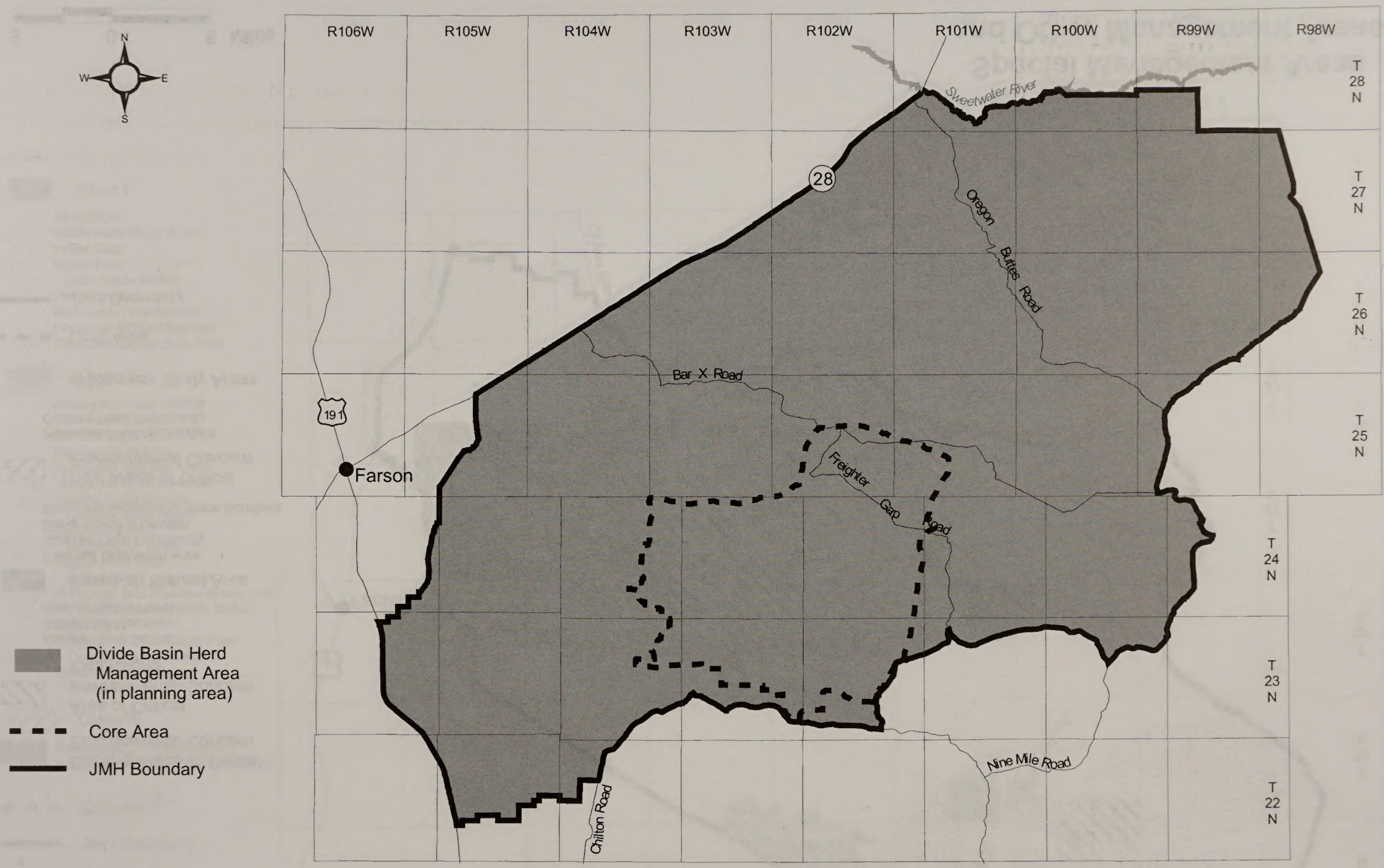
Visual Resource Management Classifications



Map 37

Alternative 2

Special Management Areas and Other Management Areas



Map 38

Alternative 3

Wild Horses Herd Management Areas

Land and Water Resources



N
W E
S

No Surface Occupancy

Indian Gap
(with 100 ft. buffer)
Special Status Plants ACEC
(Large-fruited Bladderpod,
Meadow Pussytoes,
Nelson's Milkvetch)
Greater Sage-Grouse Leks
(with 1/2 mile buffer)
Raptor Nest Sites (active)
Crookston Ranch
(with 100 ft. buffer)
Tri-Territory Marker
Boars Tusk
White Mountain Petroglyphs Vista

Controlled Surface Use

Remaining ACECs
+ Expasnsions (not NSO)
Wetlands, Riparian Areas,
and Floodplains (with 1/4
mile buffer)
Slopes > 20%
Expansion Era Roads
(with 1/4 mile buffer)
National Historic Trails
(with 1/4 mile buffer)
Special Status Plants
Potential Habitat

Seasonal Limitations

Elk Birthing Areas
Mule Deer Birthing Areas
Elk Crucial Habitat
Mule Deer Crucial Habitat
Antelope Crucial Habitat
Mountain Plover Aggregation
Area (with 1/4 mile buffer)
Raptor Nesting Sites
(with 1/2 to 1 mile buffer)
Potential Greater Sage-Grouse
Nesting Habitat**
Greater Sage-Grouse
Winter Range*

Core Area

JMH Boundary

*Only sagebrush vegetation expected to be suitable habitat

**Only 50% of the area is expected to be suitable habitat

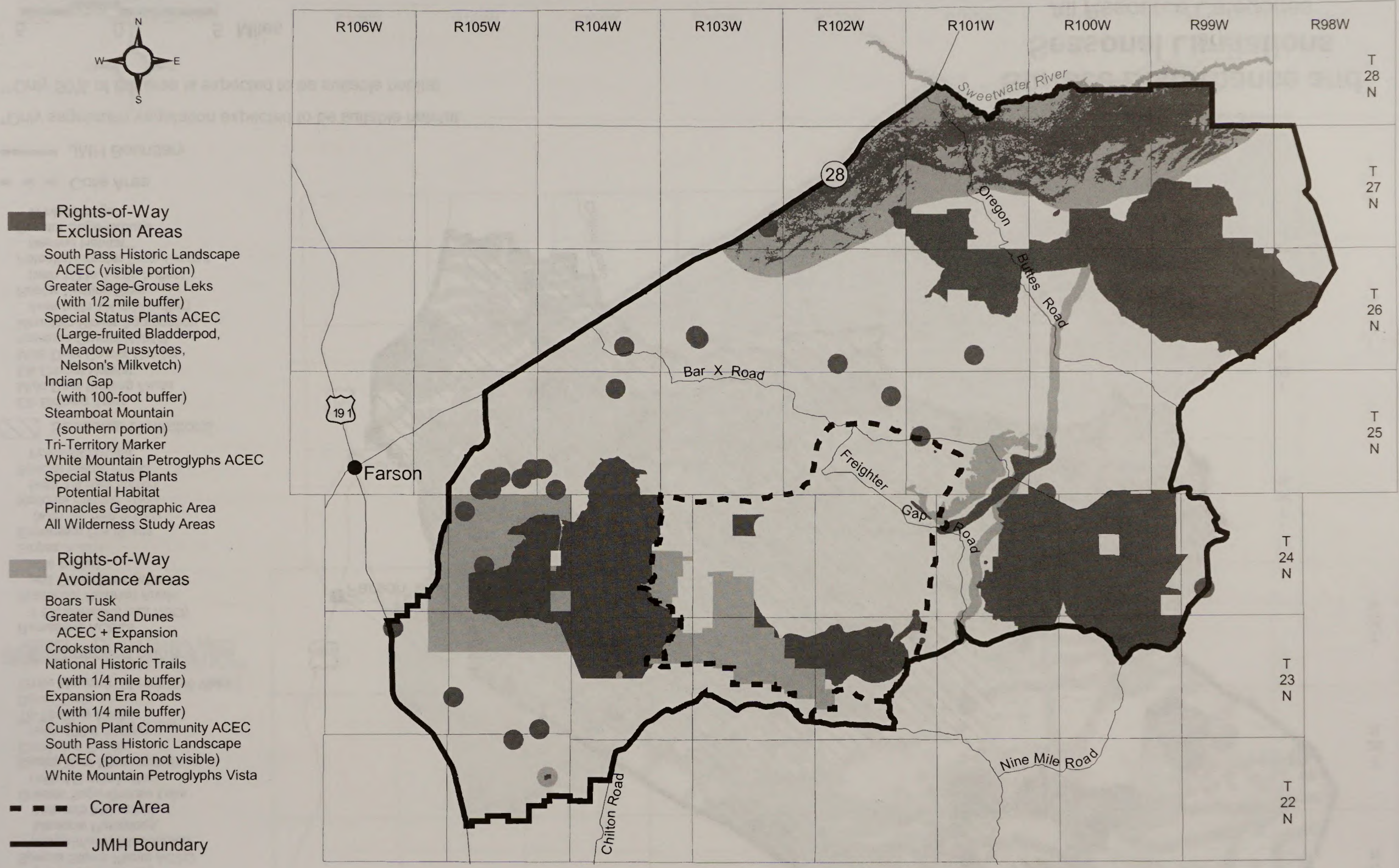
5 0 5 Miles

Map 39

Alternative 3

Surface Disturbance and Seasonal Limitations

All Resource Categories



Map 40

Alternative 3

Rights-of-Way Limitations

Travel Management,
Access, and Realty



N
W E
S

Open

Greater Sand Dunes Recreation Area

Closed

Boars Tusk
Special Status Plants ACEC (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Raptor Nest Sites (with 1/2 to 1 mile buffer)
All Wilderness Study Areas
Slopes > 25%
Greater Sage-Grouse Leks (with 1/2 mile buffer)
Crookston Ranch
Oregon Buttes ACEC
Pinnacles Geographic Area
White Mountain Petroglyphs ACEC

Limited to Designated Roads and Trails

Red Desert Watershed
Steamboat Mountain ACEC
South Pass Historic Landscape ACEC (visible portion)
Cushion Plant Community ACEC

Limited to Existing Roads and Trails

Remainder of Planning Area not designated Open, Closed, or Limited to Designated Roads and Trails

Limited to Seasonal Access

Antelope Crucial Habitat
Elk Birthing Areas
Elk Crucial Habitat
Mule Deer Birthing Areas
Mule Deer Crucial Habitat
Moutain Plover Aggregation Areas (with 1/4 mile buffer)
Potential Greater Sage-Grouse Nesting Habitat*
Greater Sage-Grouse Winter Range**

*Only 50% of the area is expected to be suitable habitat

**Only sagebrush vegetation is expected to be suitable habaitat

Core Area

JMH Boundary

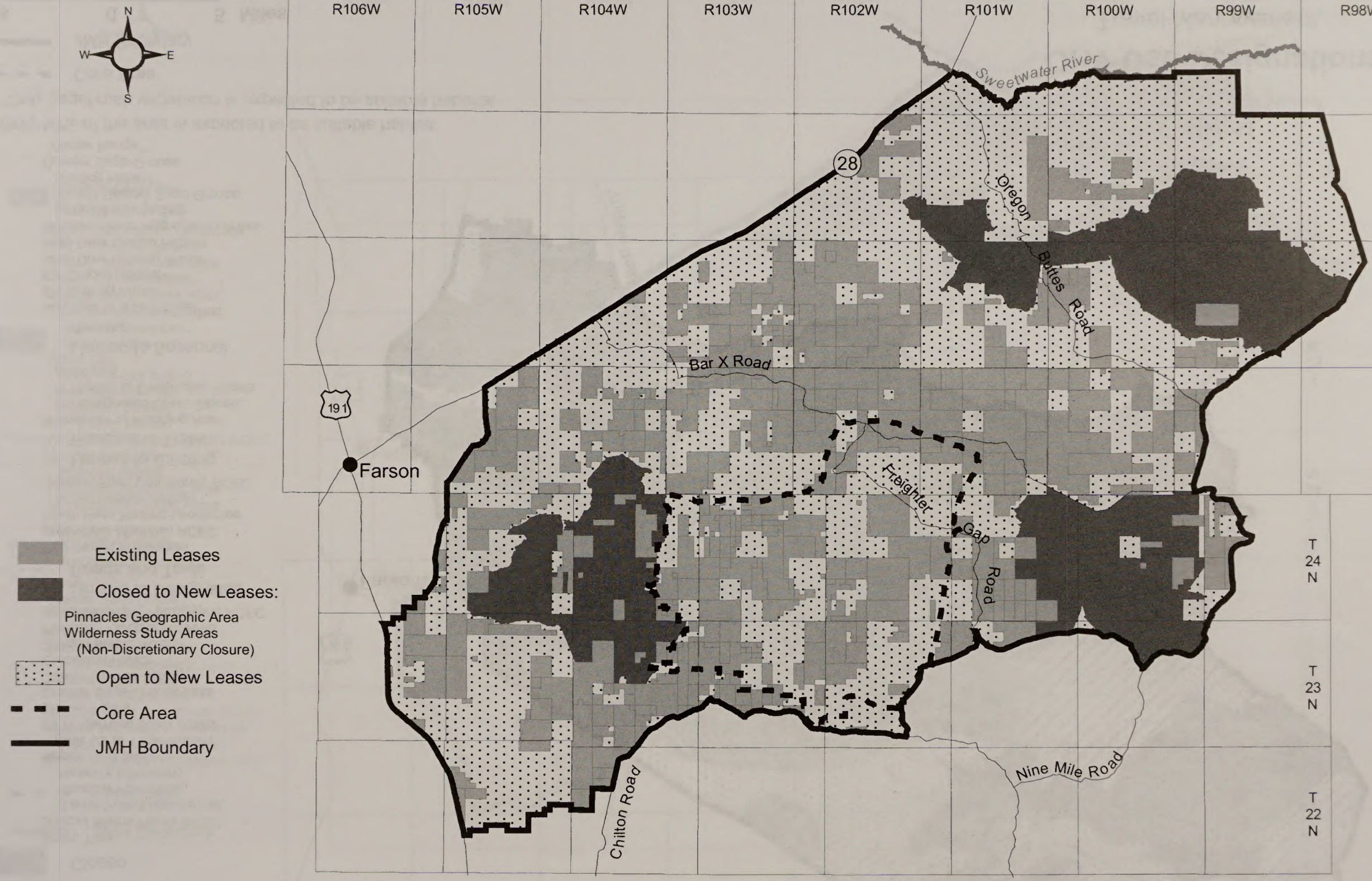
5 0 5 Miles

Map 41

Alternative 3

OHV Use Designations

Travel Management, Access and Reality

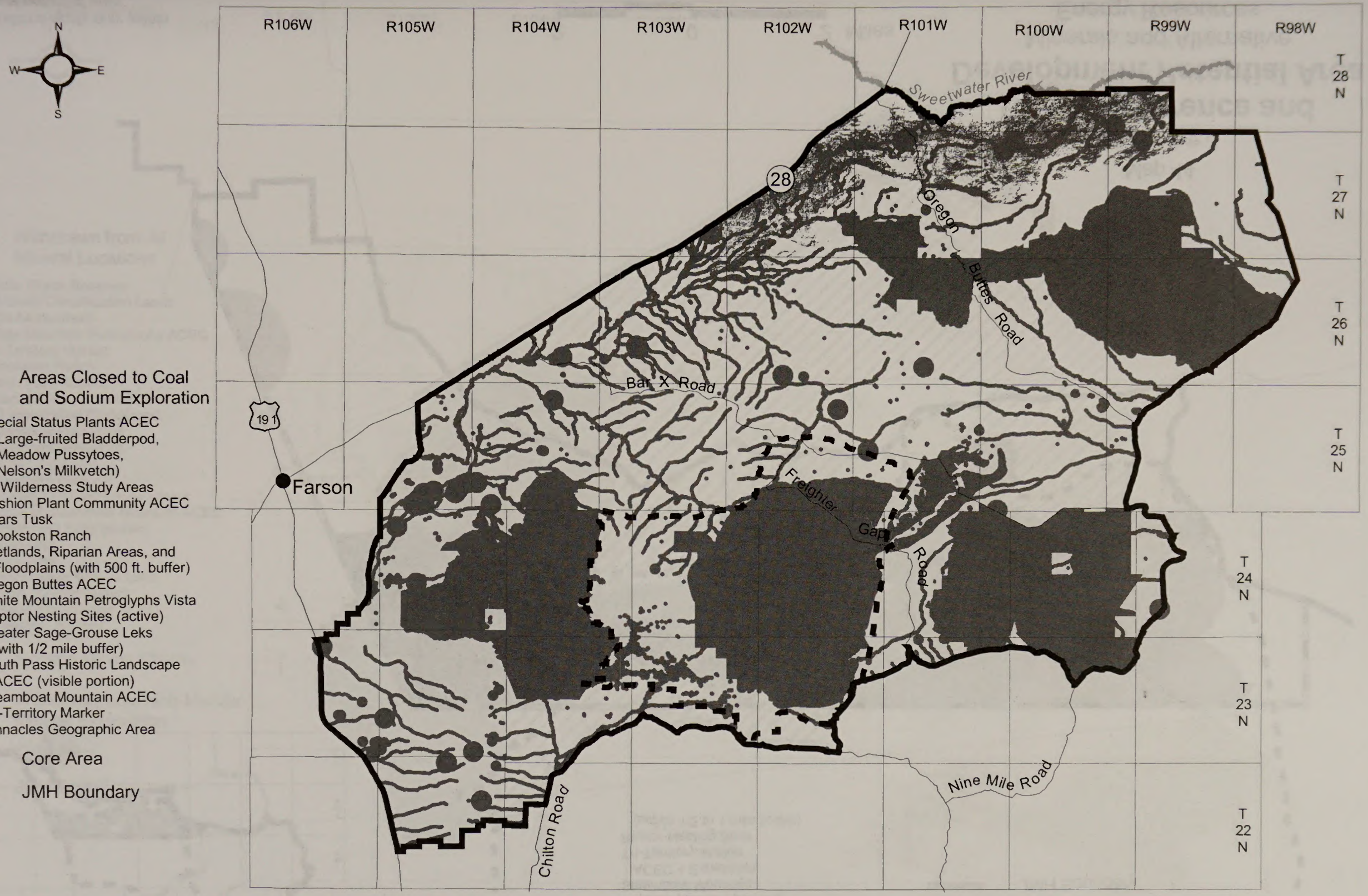


Map 42

Alternative 3

Oil and Gas Leases

Minerals and Alternative Energy Resources

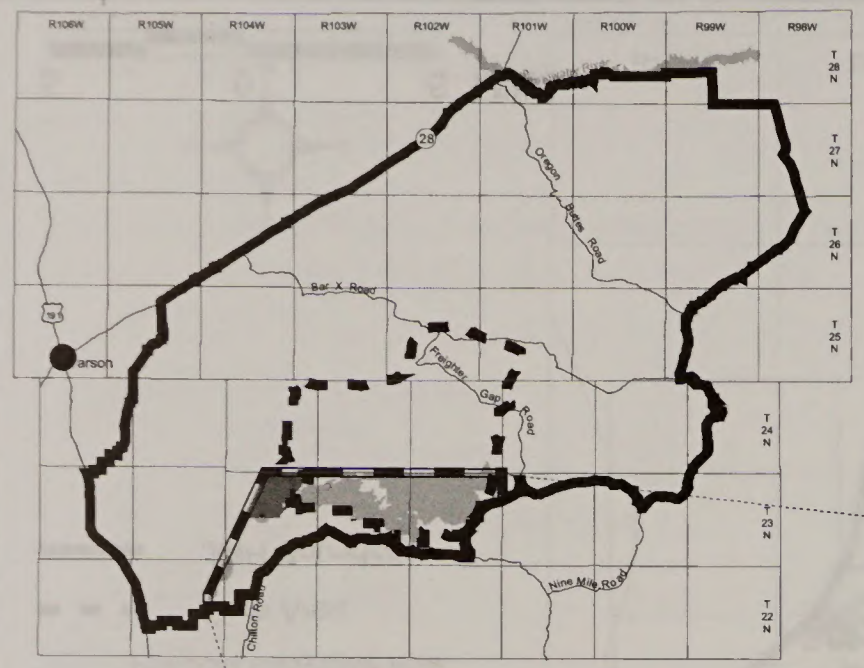


Map 43

Alternative 3

Coal and Sodium Exploration

Minerals and Alternative Energy Resources



Closed to Coal Leases

Sand Dunes WSA
Greater Sand Dunes
ACEC (western portion)

Open to Coal Leasing with Subsurface Mining and Controls on Surface Facilities

Greater Sand Dunes
ACEC (eastern portion)
Steamboat Mountain
ACEC + Expansion
Tri-Territory Marker
Raptor Nesting Sites
(within 1/2 to 1 mile buffer)

Open to Coal Leasing with No Surface Occupancy

Boars Tusk
Crookston Ranch

Areas of Coal Occurrence and Development Potential

Core Area

JMH Boundary

N
W
E
S

*Note: Limitations apply only within the coal potential area.

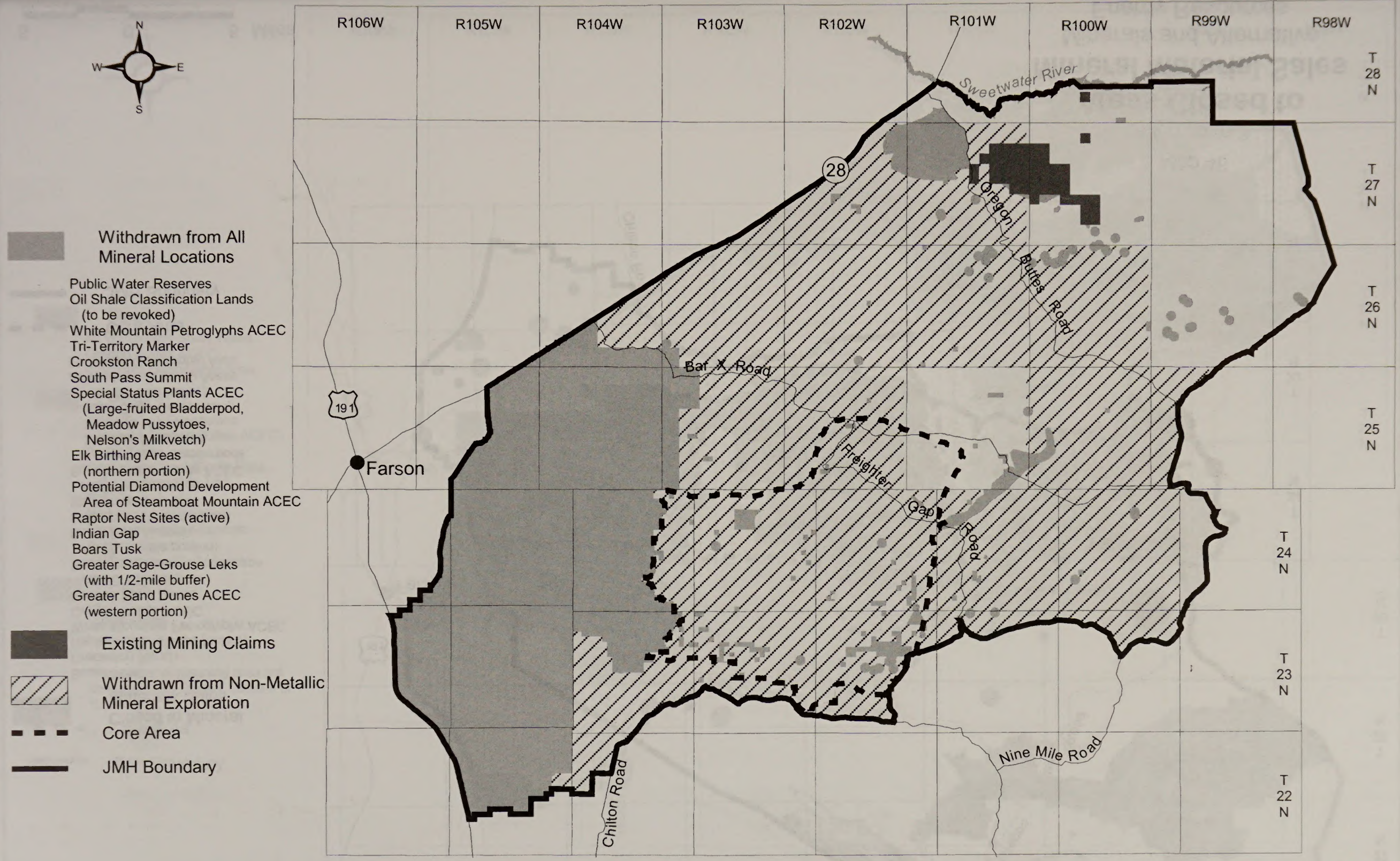
2 0 2 Miles

Map 44

Alternative 3

Coal Occurrence and Development Potential Area

Minerals and Alternative Energy Resources



Map 45

Alternative 3

Locatable Minerals

Minerals and Alternative Energy Resources

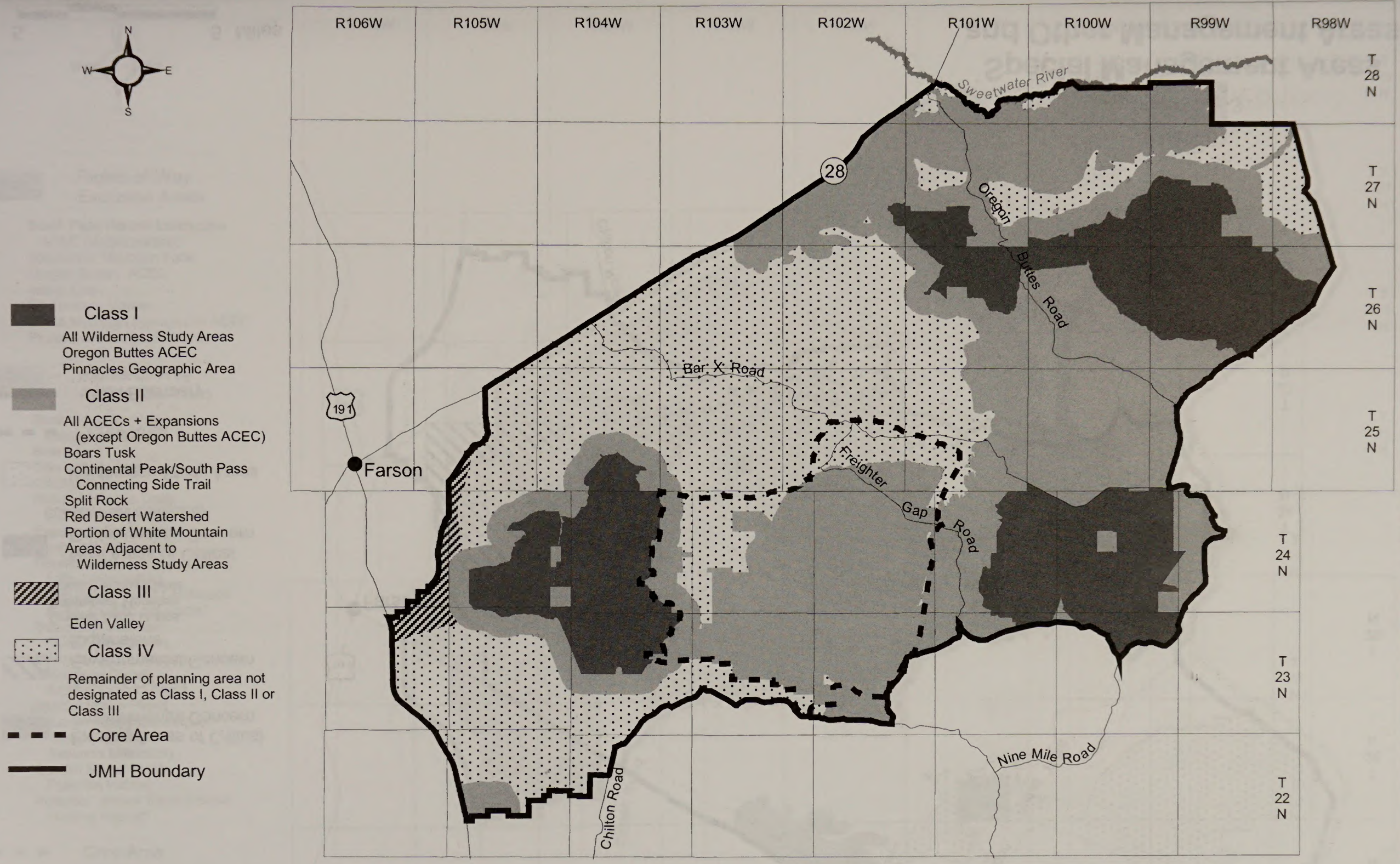


Map 46

Alternative 3

Areas Closed to Mineral Material Sales

Minerals and Alternative Energy Resources



Map 47

Alternative 3

Visual Resource Management Classifications



Map 48

Alternative 3

Special Management Areas and Other Management Areas



Rights-of-Way Exclusion Areas

South Pass Historic Landscape ACEC (visible portion)
Steamboat Mountain Face
Oregon Buttes ACEC
Indian Gap
Tri-Territory Marker
White Mountain Petroglyphs ACEC
Pinnacles Geologic Feature

Rights-of-Way Avoidance Areas

Steamboat Mountain Management Area
Boars Tusk
Connectivity Area
Crookston Ranch
National Historic Trails (with 1/4 mile buffer)
Expansion Era Roads (with 1/4 mile buffer)
Greater Sand Dunes ACEC (with 1 mile buffer)
South Pass Historic Landscape ACEC (portion not visible)
Steamboat Mountain ACEC + Expansion
White Mountain Petroglyphs Vista
West Sand Dunes Archaeological District
Special Status Plants (Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
Special Status Plants Potential Habitat
Potential Greater Sage-Grouse Nesting Habitat*

Core Area

JMH Boundary

*Only 50% of the area is expected to be suitable habitat

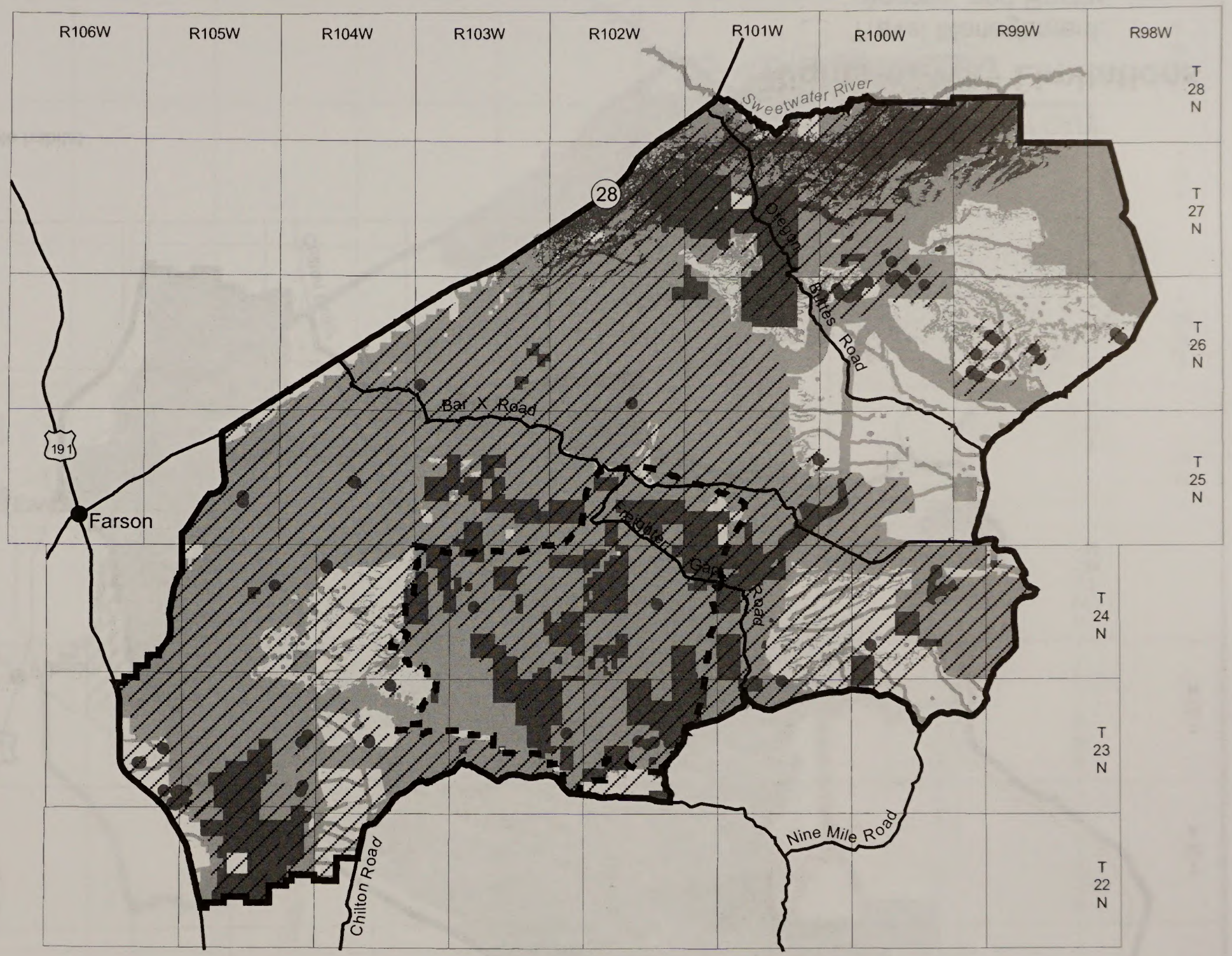
5 0 5 Miles

Map 49

Proposed JMH CAP

Rights-of-Way Limitations

Travel Management, Access, and Realty



N
W E
S

No Surface Occupancy

Boars Tusk
Indian Gap (with 100 ft. buffer)
White Mountain Petroglyphs Vista
Oregon Buttes ACEC
Greater Sand Dunes ACEC
(Developed recreation sites and OHV parking lot)
Tri-territory Marker
Crookston Ranch (with 100 ft. buffer)
Raptor Nest Sites (active)
South Pass Historic Landscape ACEC (visible portion)
Special Status Plants
Pinnacles Proper
Sensitive Resources

Controlled Surface Use

Greater Sage-Grouse Winter Range**
Greater Sage-Grouse Leks (with 1/4 Mile buffer)
Wetlands, Riparian Areas, and Floodplains (with 500 ft. buffer)
National Historic Trails (with 1/4 mile buffer)
Slopes > 20%
Special Status Plants Potential Habitat
West Sand Dunes Archaeological District
Pinnacles Geologic Feature
Potential Greater Sage-Grouse Nesting Habitat*
All ACECs except Oregon Buttes ACEC
Areas Adjacent to Wilderness Study Areas
Portion of White Mountain Steamboat Mountain Management Area
Sensitive Resources
South Pass Historic Landscape ACEC (portion not visible)

Seasonal Limitations

Antelope Crucial Habitat
Elk Crucial Habitat
Mule Deer Crucial Habitat
Elk Birthing Areas
Mule Deer Birthing Areas
Mountain Plover Aggregation Areas (with 1/4 mile buffer)
Raptor Nesting Sites (with 1/2 to 1 mile buffer)
Greater Sage-Grouse Leks (with 1/4 Mile buffer)
Potential Greater Sage-Grouse Nesting Habitat*
Greater Sage-Grouse Winter Range**

Core Area
JMH Boundary

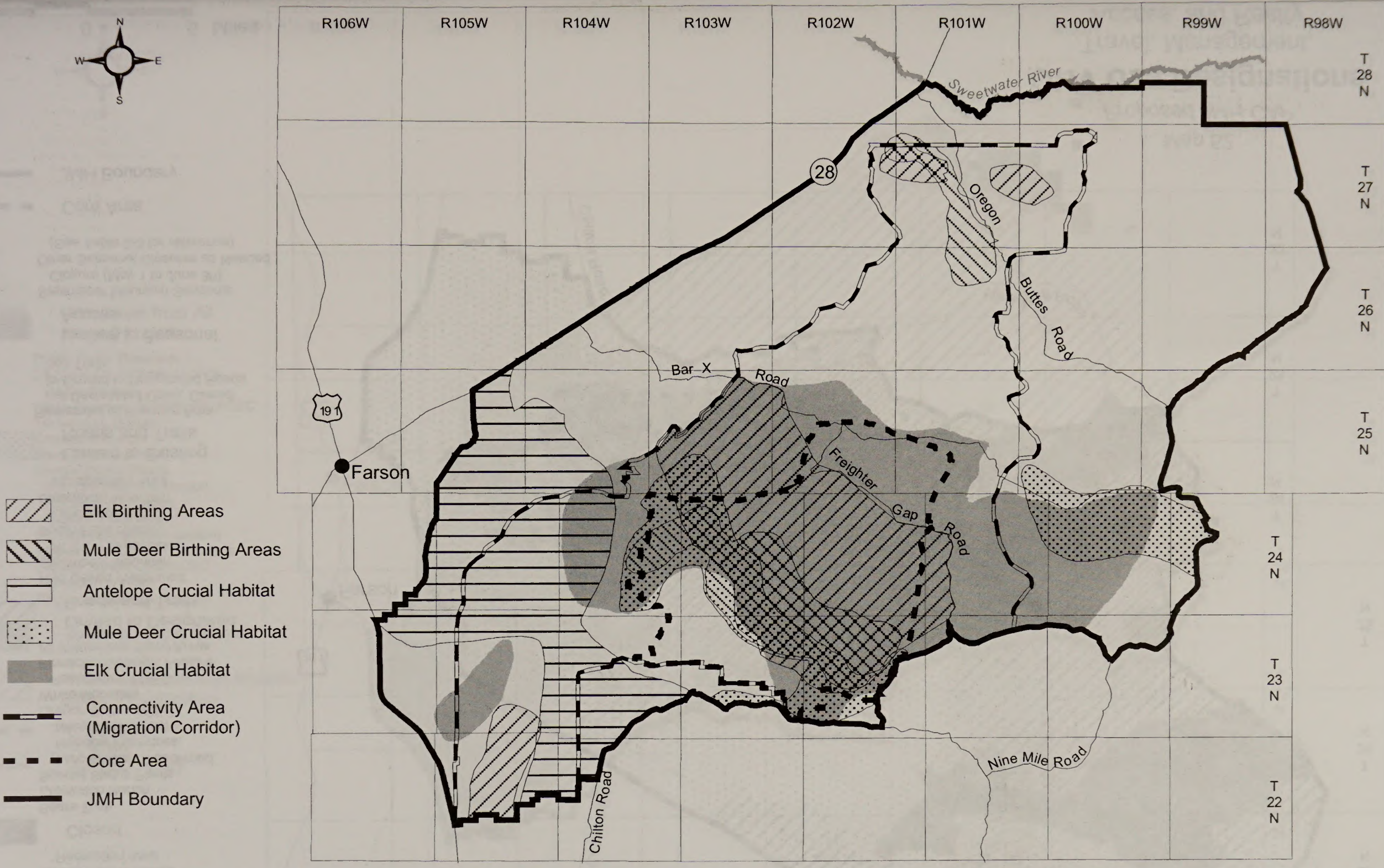
*Only 50% of the area is expected to be suitable habitat
**Only sagebrush vegetation is expected to be suitable habitat

5 0 5 Miles

Map 50
Proposed JMH CAP

Surface Disturbance and Seasonal Limitations

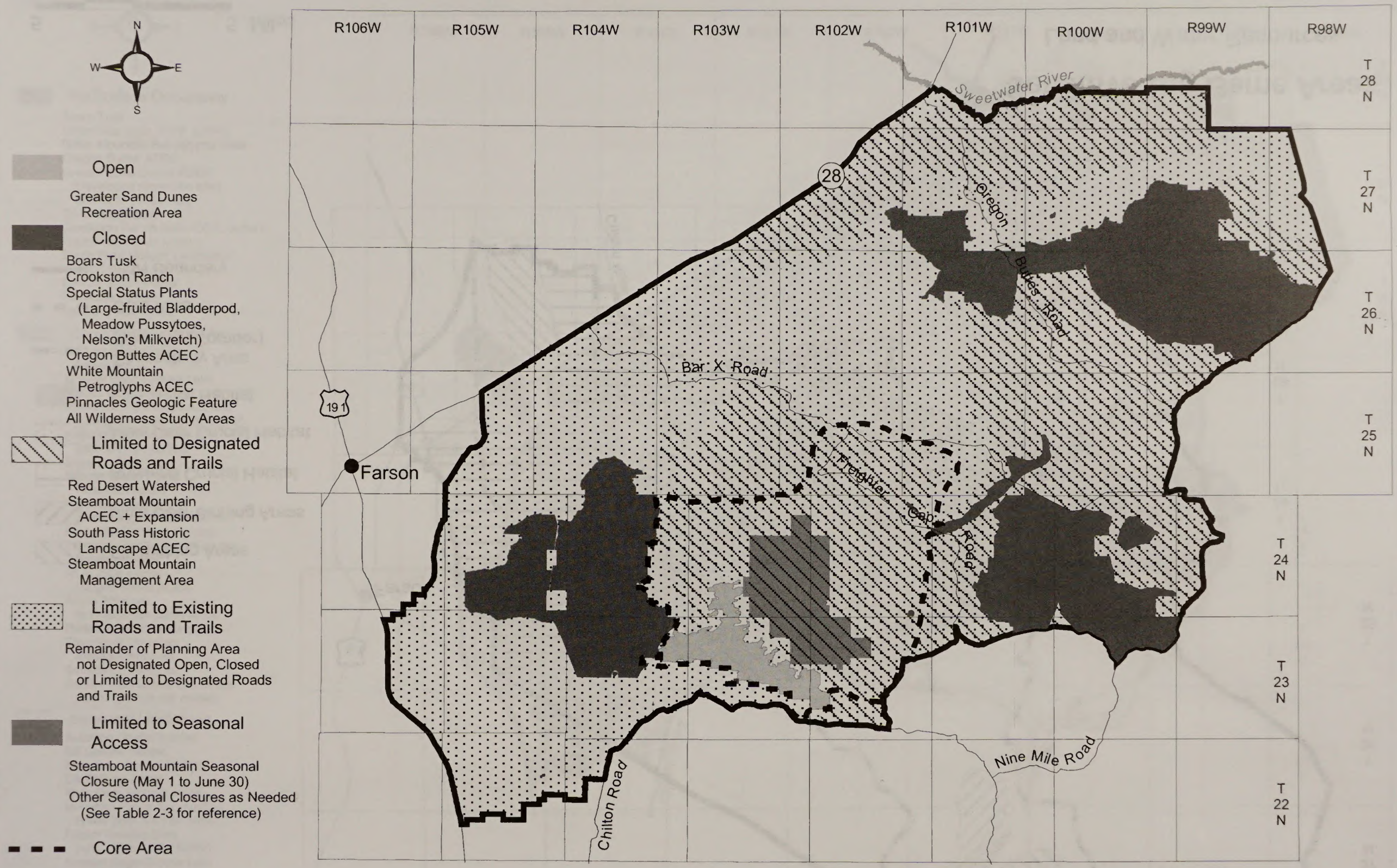
All Resource Categories



Map 51

Sensitive Big Game Areas

Land and Water Resources

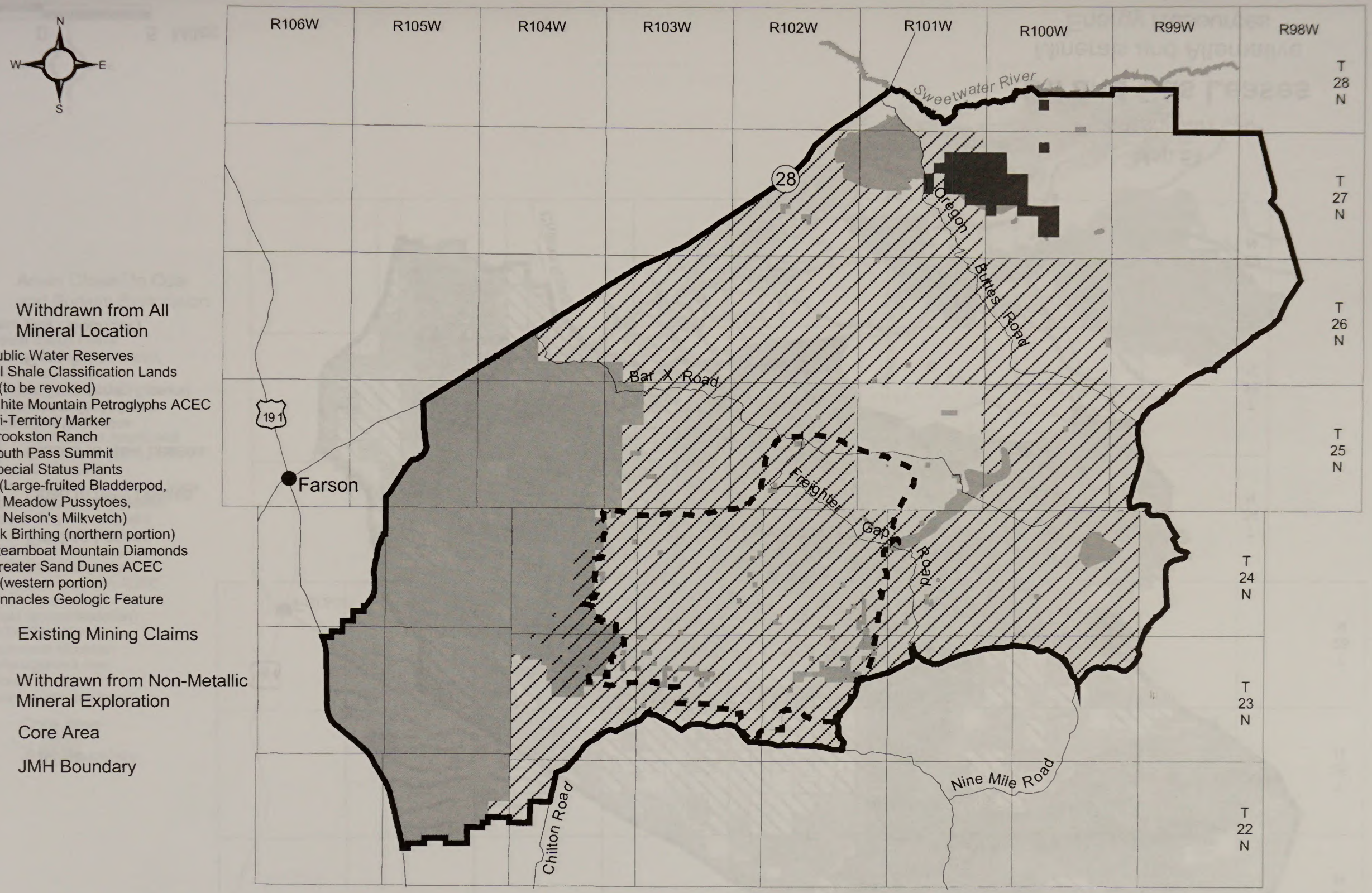


Map 52

Proposed JMH CAP

OHV Use Designations

Travel, Management, Access, and Realty

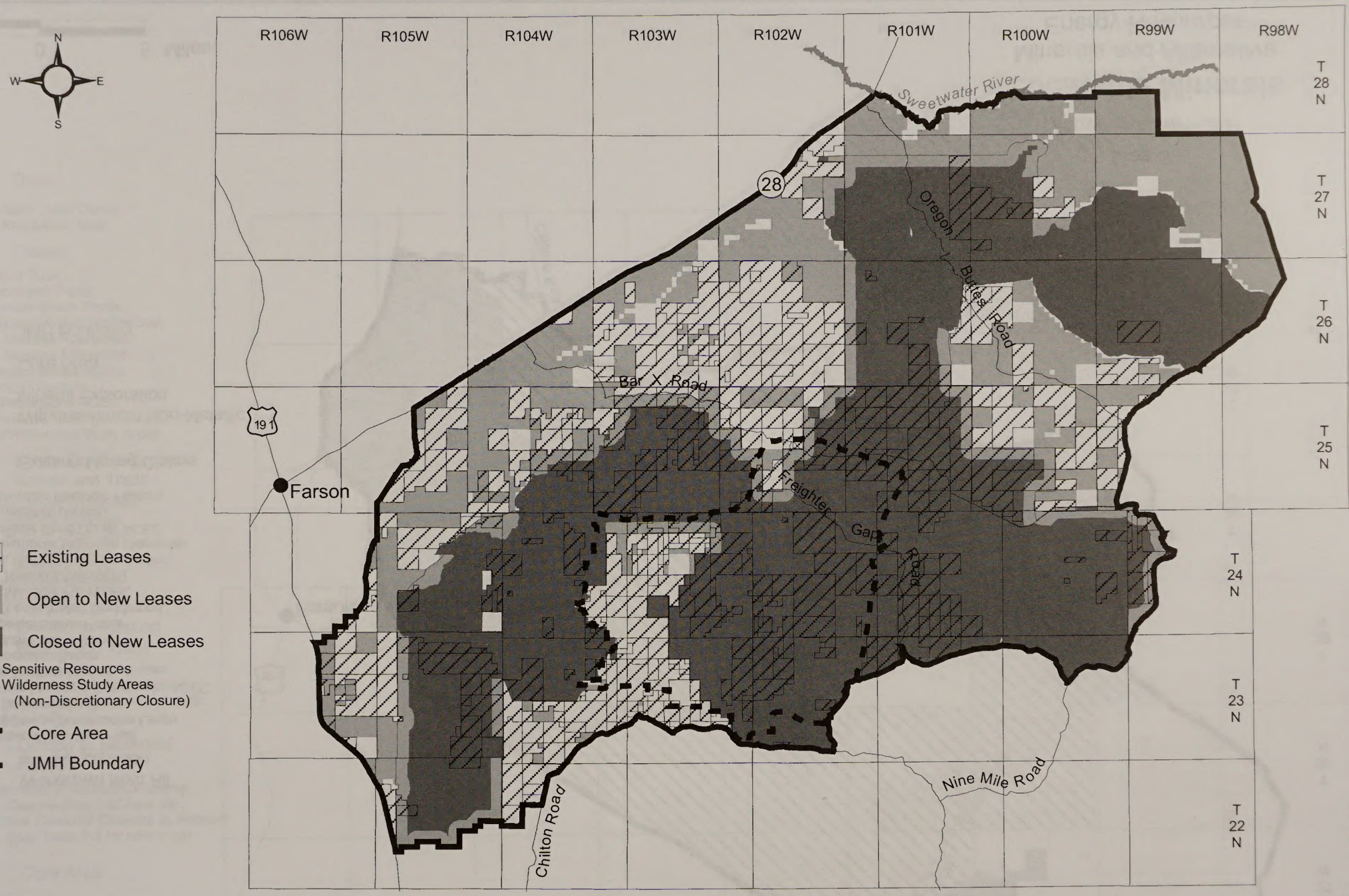


Map 53

Proposed JMH CAP

Locatable Minerals

Minerals and Alternative Energy Resources



Map 54

Proposed JMH CAP

Oil and Gas Leases

Minerals and Alternative Energy Resources

N
W E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Areas Closed to Coal and Sodium Exploration

Boars Tusk
Special Status Plants
(Large-fruited Bladderpod, Meadow Pussytoes, Nelson's Milkvetch)
All Wilderness Study Areas
Crookston Ranch
Wetlands, Riparian Areas, and Floodplains (with 500 ft. buffer)
Oregon Buttes ACEC
White Mountain Petroglyphs Vista
Raptor Nesting Sites (active)
Greater Sage-Grouse leks (with 1/4 mile buffer)
South Pass Historic Landscape ACEC (visible portion)
Steamboat Mountain ACEC (outside area with coal recommendation)
Tri-Territory Marker
Steamboat Mountain Management Area (outside area with coal recommendation)

Core Area

JMH Boundary

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road

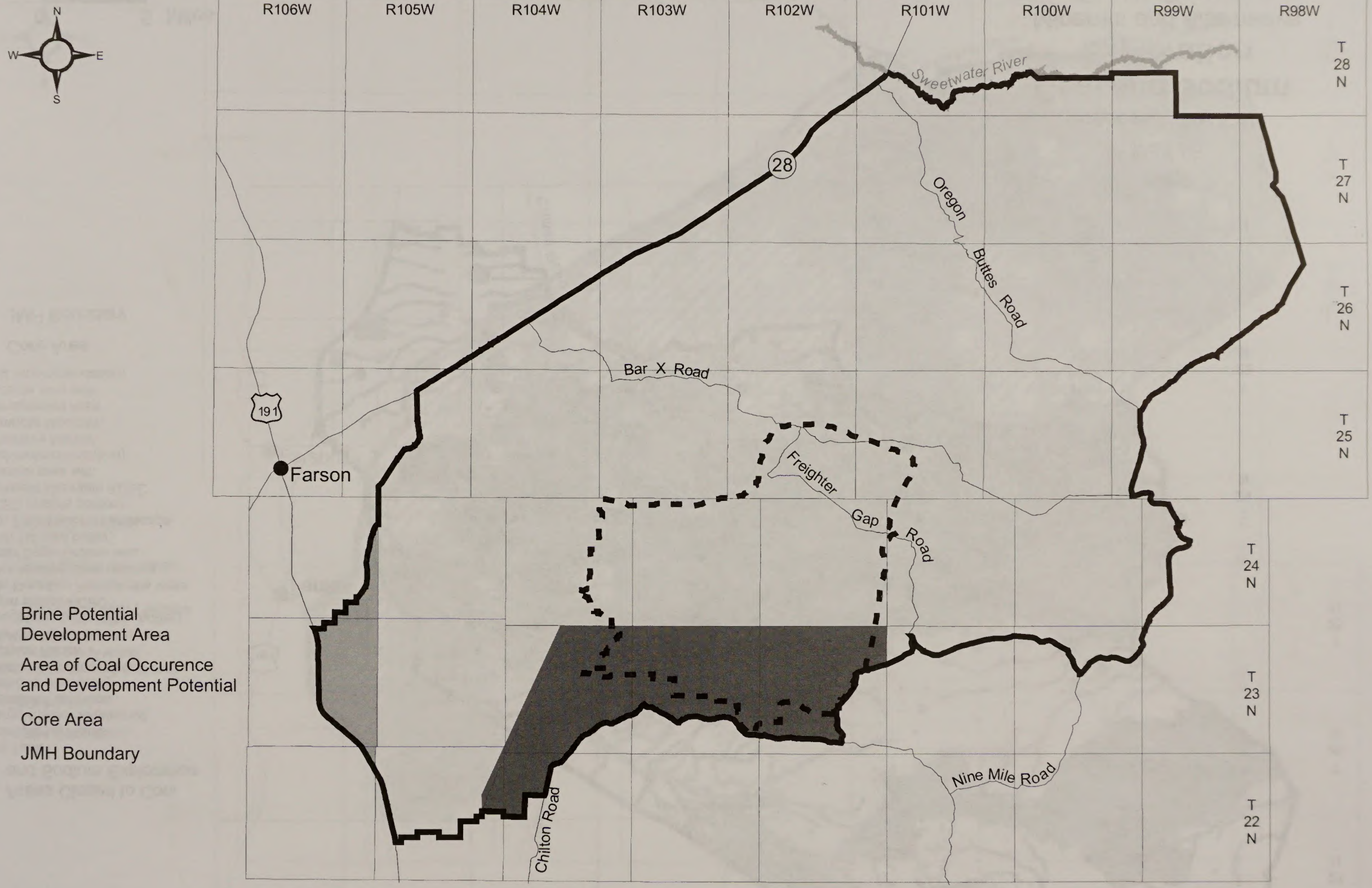
5 0 5 Miles

Map 55

Proposed JMH CAP

Coal and Sodium Exploration

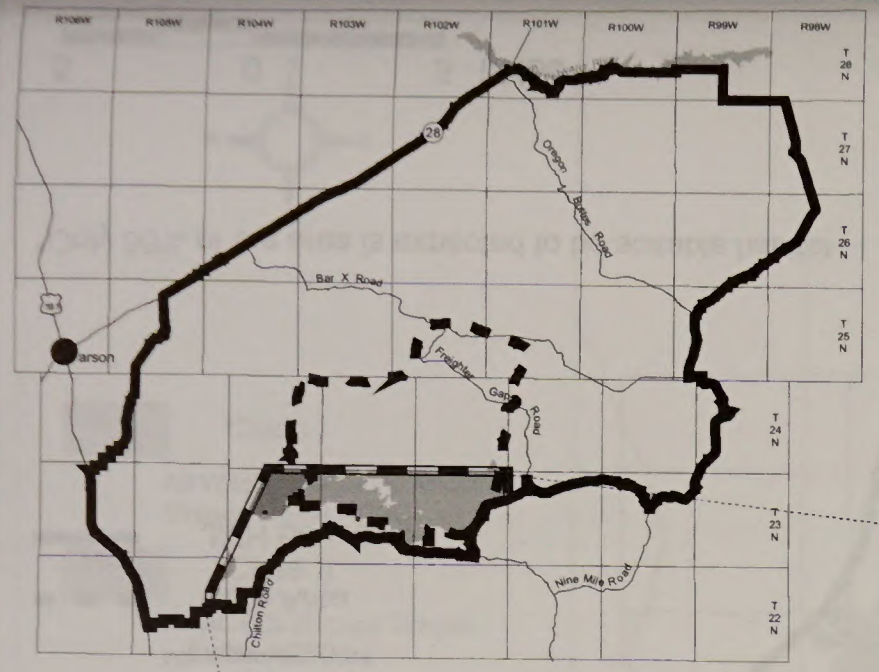
Minerals and Alternative Energy Sources



Map 56

Coal and Sodium Development Potential

Minerals and Alternative Energy Resources



Closed to Coal Leases

Sand Dunes WSA
Greater Sand Dunes
ACEC (western portion)

Open to Coal Leasing with Subsurface Mining and Controls on Surface Facilities

Greater Sand Dunes
ACEC (eastern portion)
Steamboat Mountain Management Area
Tri-Territory Marker
Raptor Nesting Sites
(within 1/2 to 1 mile buffer)

Open to Coal Leasing with No Surface Occupancy

Boars Tusk
Crookston Ranch

Areas of Coal Occurrence and Development Potential

Core Area

JMH Boundary

N
W
E
S

*Note: Limitations apply only within the coal potential area.

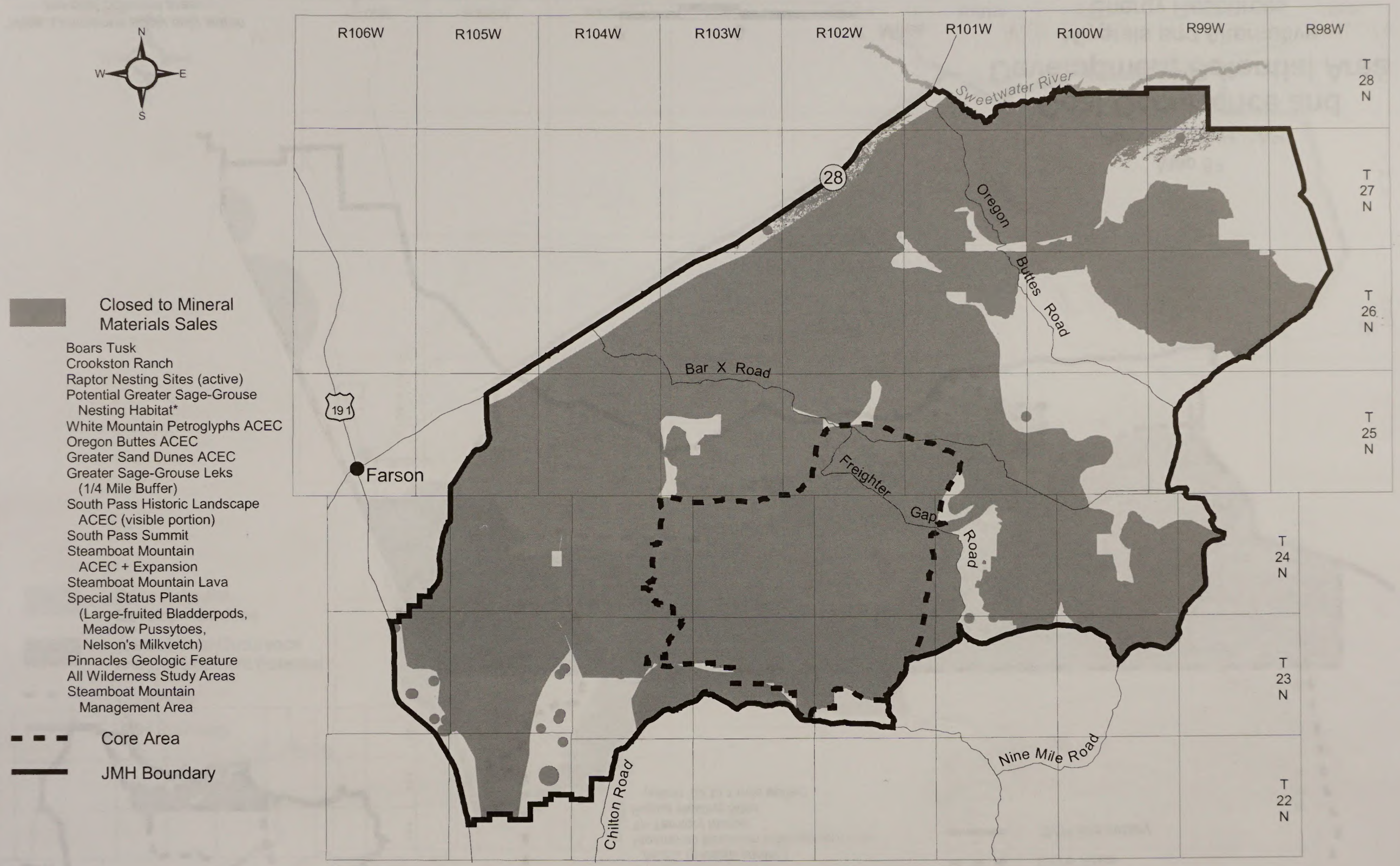
2 0 2 Miles

Map 57

Proposed JMH CAP

Coal Occurrence and Development Potential Area

Minerals and Alternative Energy Resources



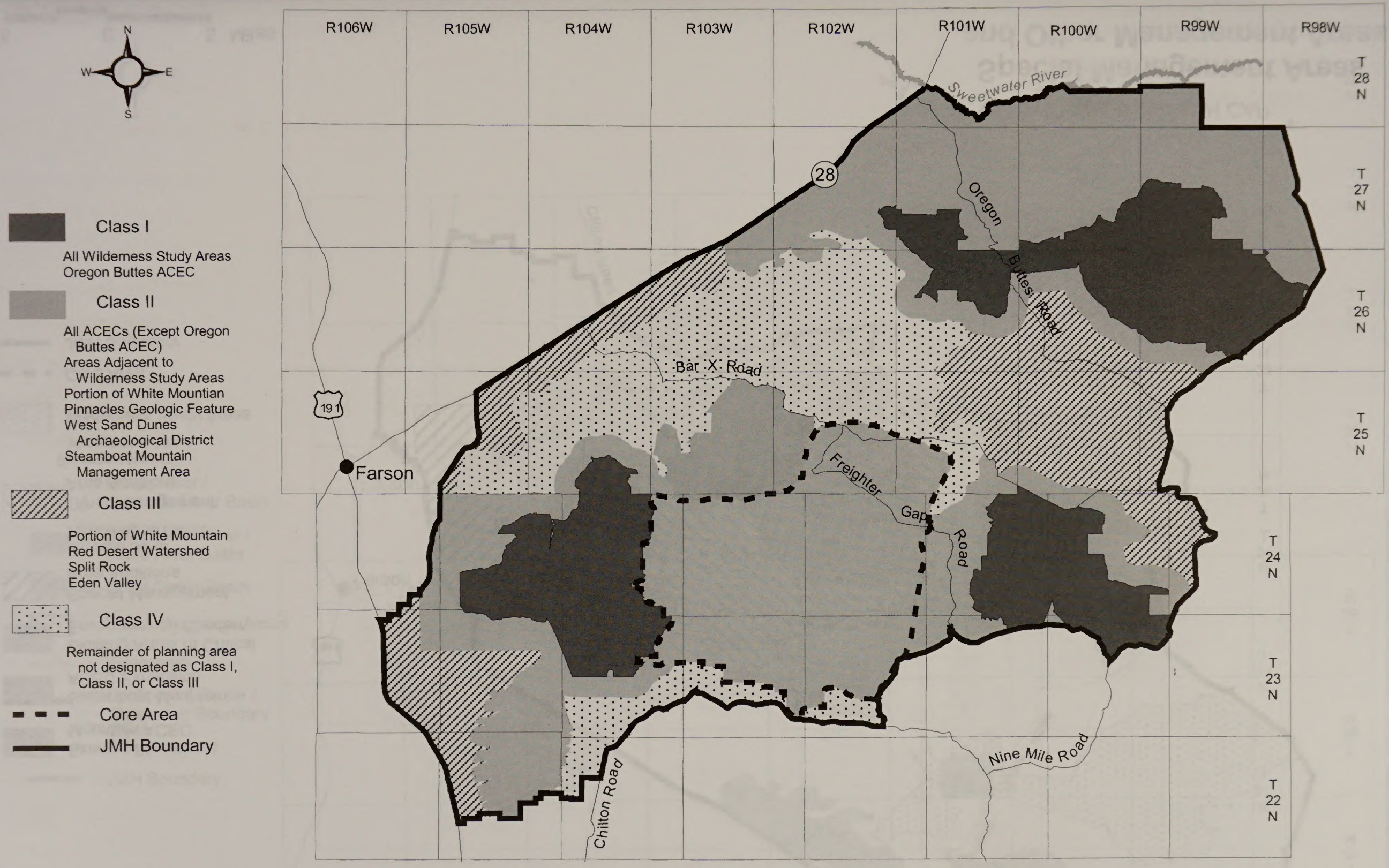
*Only 50% of the area is expected to be suitable habitat

Map 58

Proposed JMH CAP

Areas Closed to Mineral Material Sales

Minerals and Alternative Energy Sources



Map 59

Proposed JMH CAP

Visual Resource Management Classifications



Map 60

Proposed JMH CAP

Special Management Areas and Other Management Areas



Map 61

Water Resources and Watersheds

Land and Water Resources



R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
Oregon Buttes Road
Bar X Road
Freighter Gap Road
Nine Mile Road
Chilton Road
28
191
Farson

Divide Basin Herd Management Area (in planning area)

Core Area

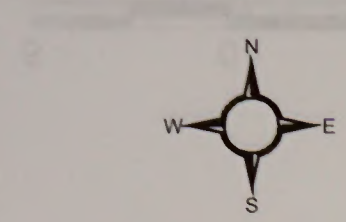
JMH Boundary

5 0 5 Miles

Map 62

Wild Horses Herd Management Areas

Land and Water Resources



Range Improvements

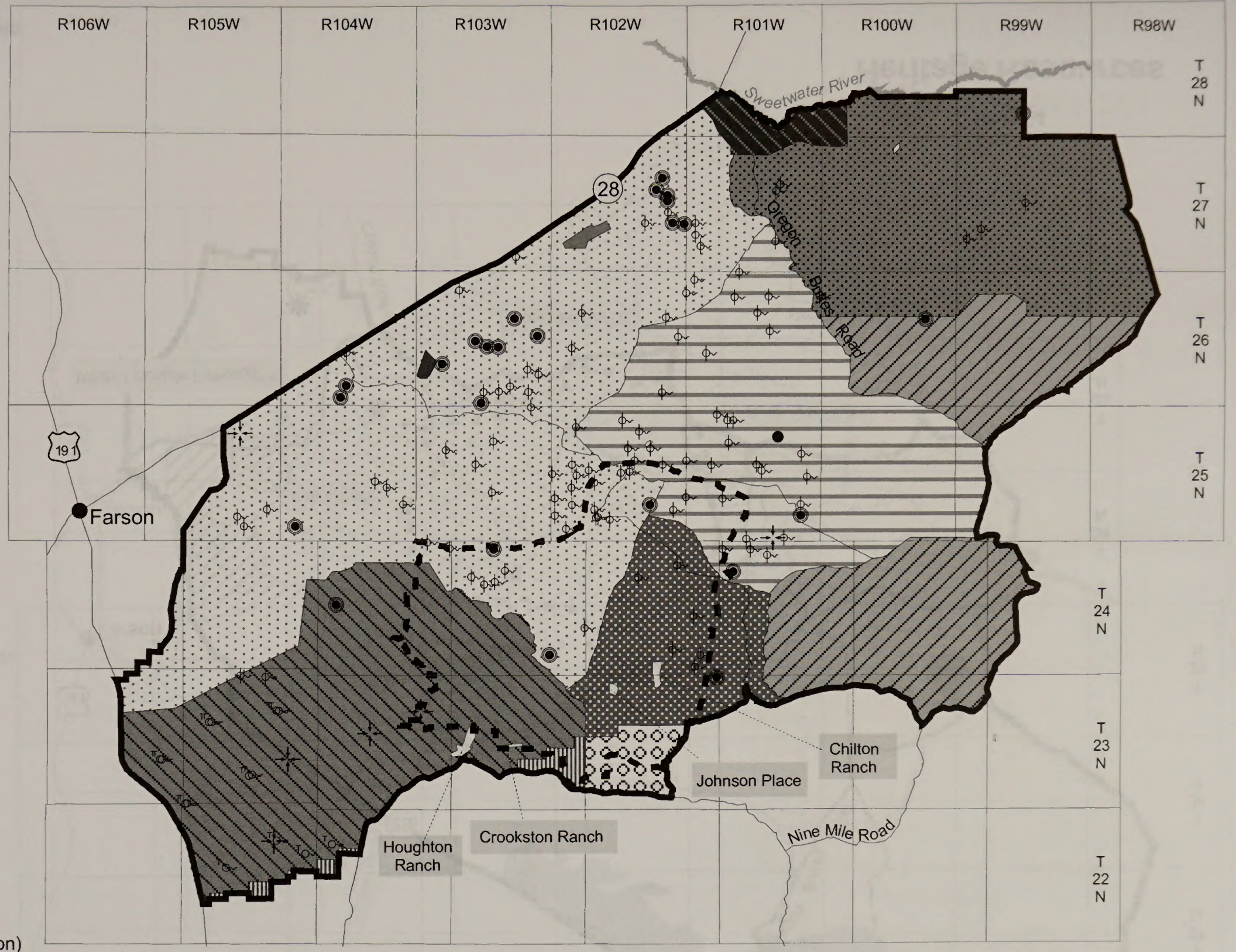
- Pit
- Reservoir
- Spring
- Trough
- Water Well

Allotments

- Bar X
- Bush Rim
- Continental Peak
- Fourth of July
- Hay Meadow
- Middle Hay
- Pacific Creek
- Red Desert
- Rock Springs
- Sands
- Steamboat Mountain
- Multiple Allotments (See Map for Designation)

- Core Area
- JMH Boundary

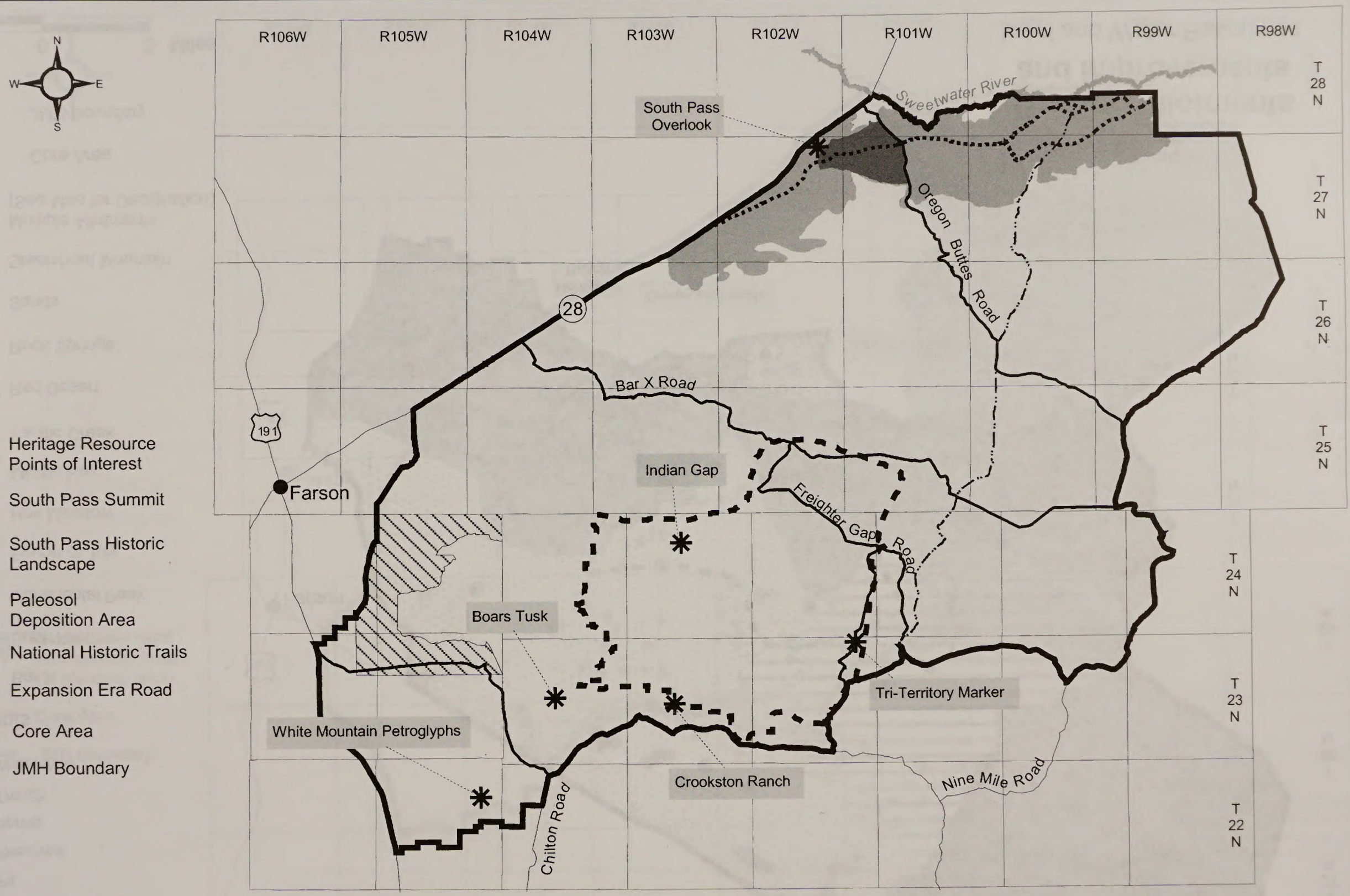
5 0 5 Miles



Map 63

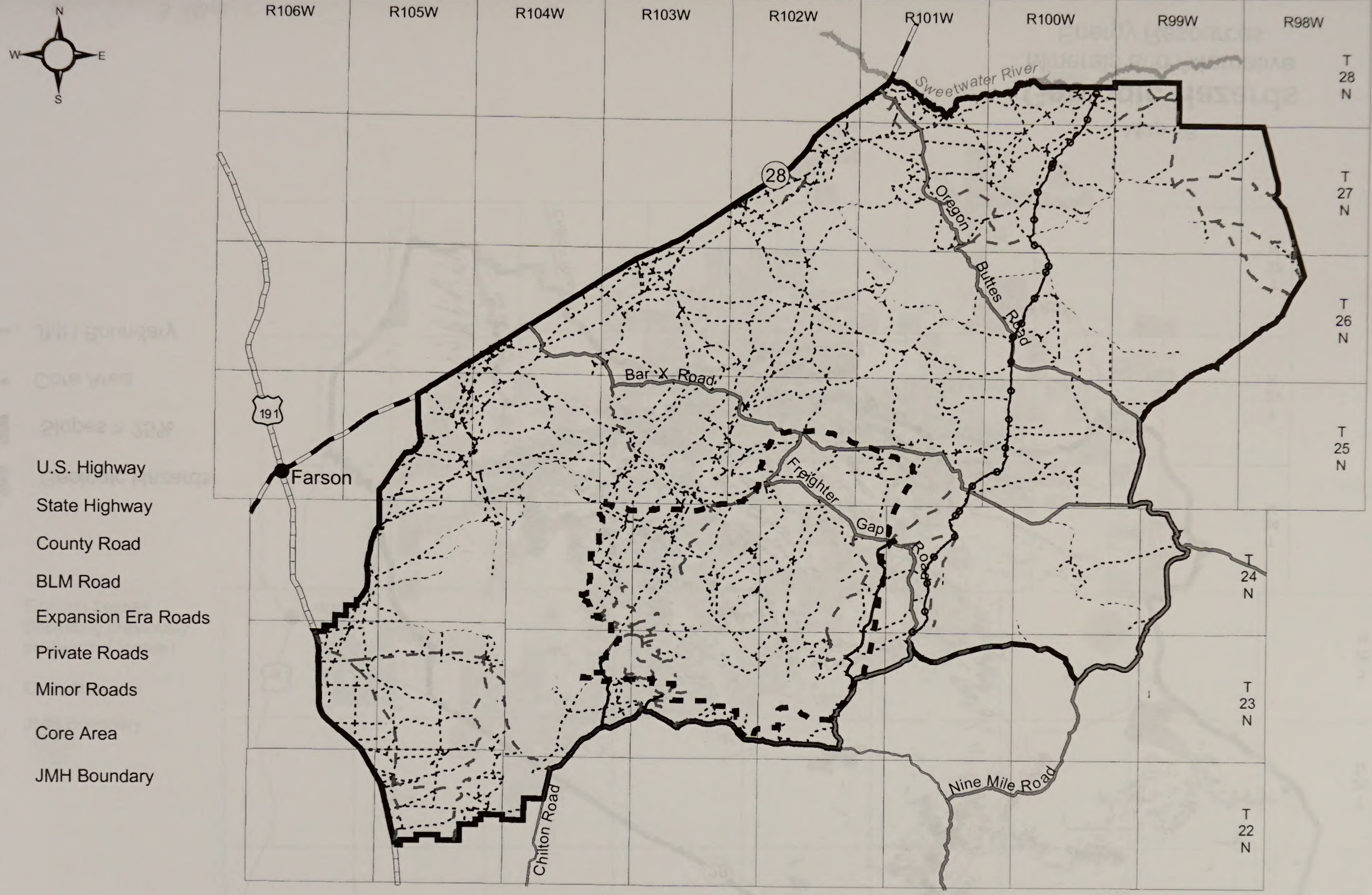
Grazing Allotments and Improvements

Land and Water Resources



Map 64

Heritage Resources



Map 65

Existing Roads

Travel Management, Access, and Realty

N
W
E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
Oregon Buttes Road
Bar X Road
28
191
Farson
Chilton Road
Nine Mile Road

Geologic Hazards
Slopes > 25%
Core Area
JMH Boundary

5 0 5 Miles

Map 66

Geologic Hazards

Minerals and Alternative Energy Resources

N
W E
S

R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Chilton Road
Nine Mile Road

Existing Leases
(Including previously suspended leases)

Core Area

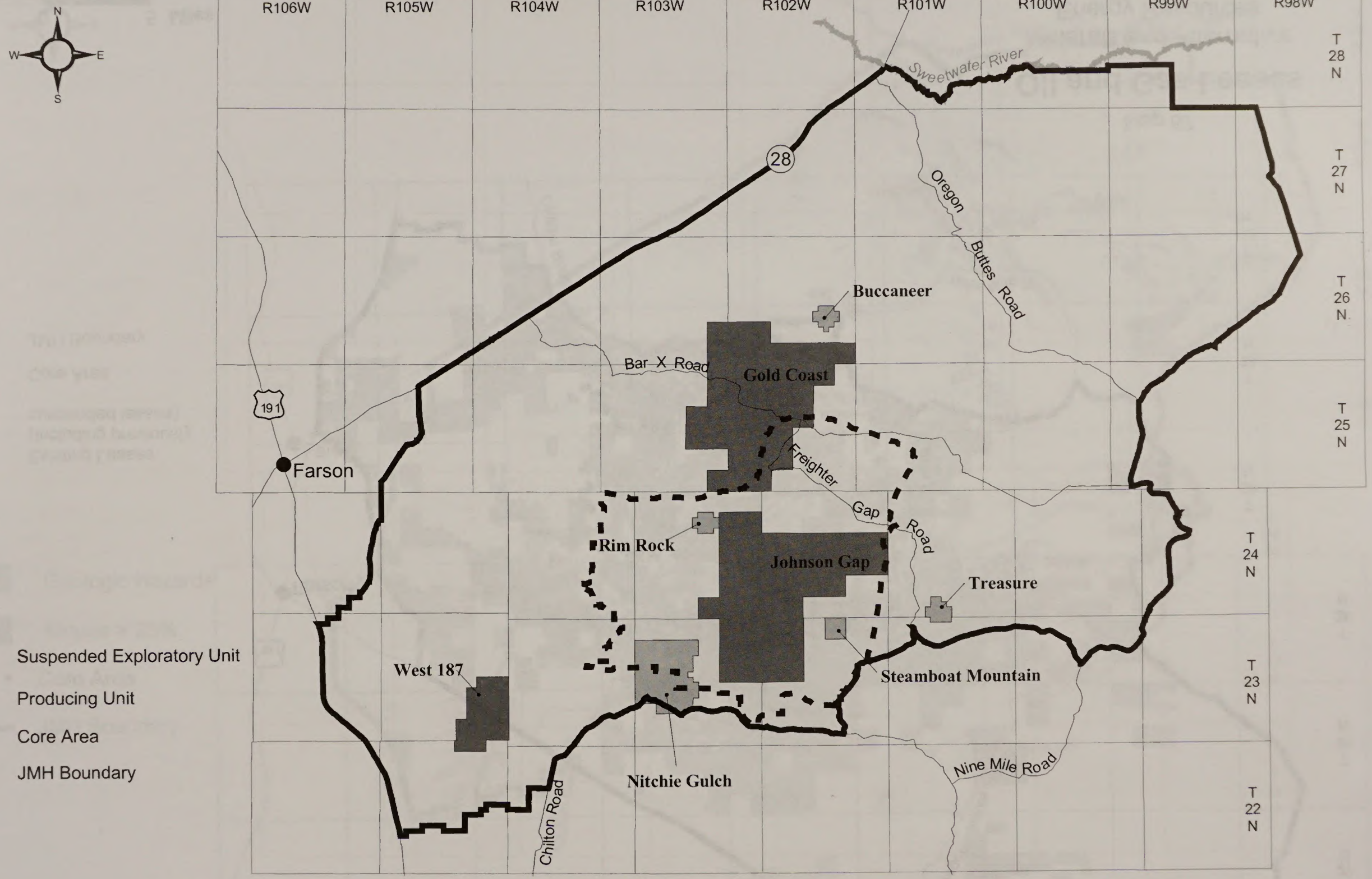
JMH Boundary

5 0 5 Miles

Map 67

Oil and Gas Leases

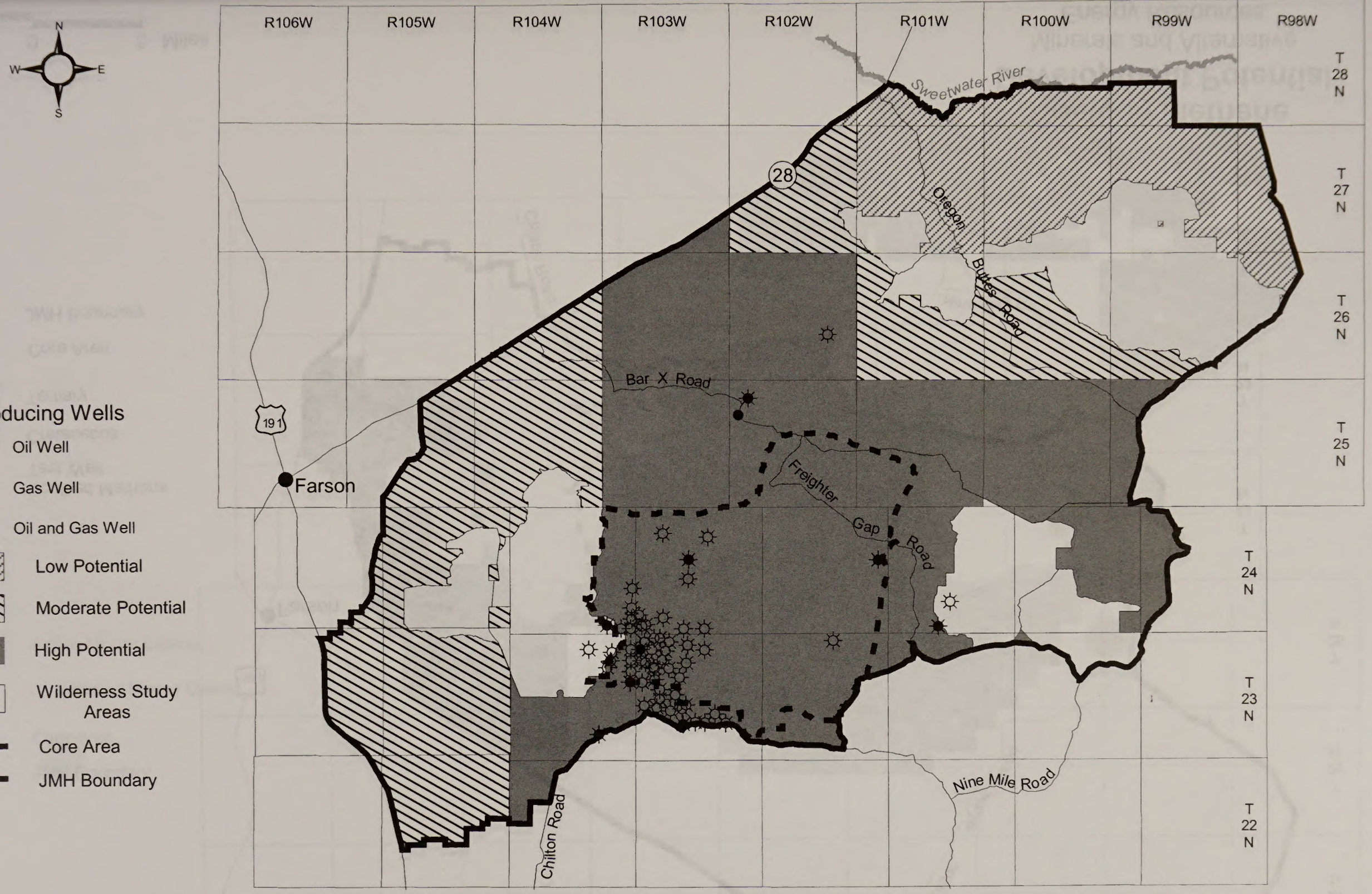
Minerals and Alternative Energy Resources



Map 68

Federal Units

Minerals and Alternative Energy Resources



Map 69

Oil and Gas Development Potential

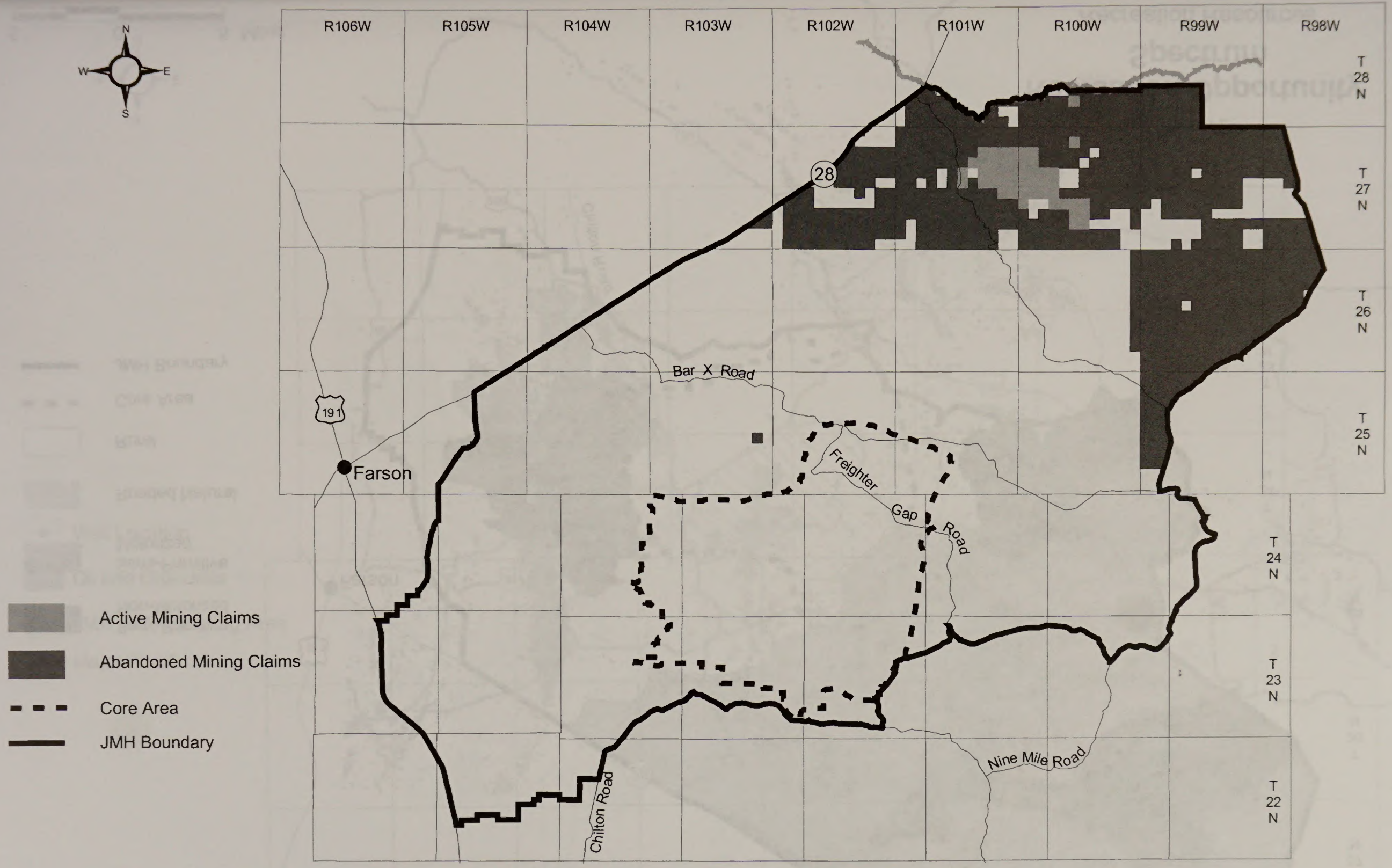
Minerals and Alternative Energy Resources



Map 70

Coalbed Methane Development Potential

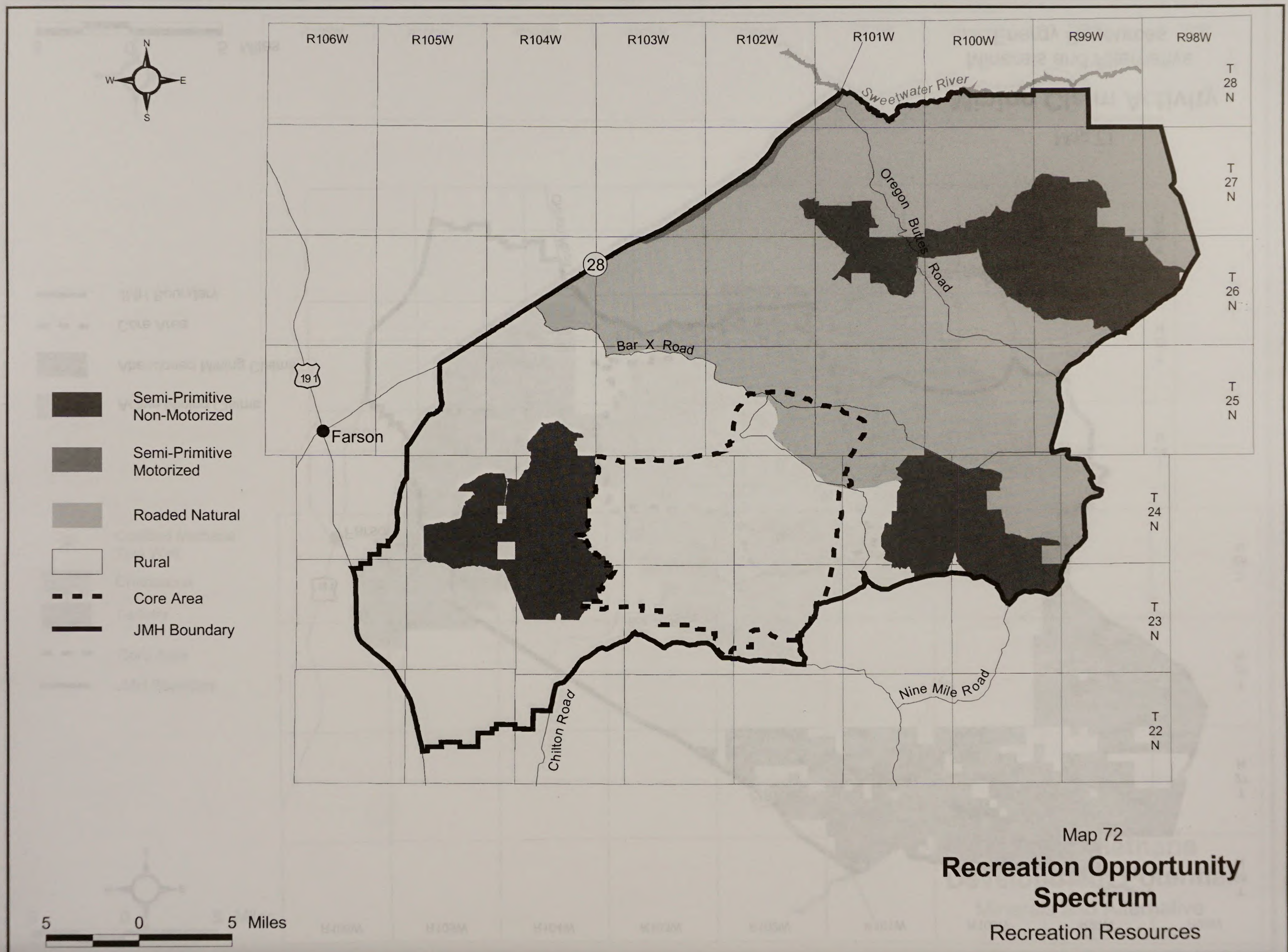
Minerals and Alternative Energy Resources



Map 71

Mining Claim Activity

Minerals and Alternative Energy Resources



Map 72

Recreation Opportunity Spectrum

Recreation Resources

N
W E
S

- Well Location
- Oil and Gas Units
- JMH CAP Planning Area
- Major Roads

Farson

120 26 189 89 191 189 30 20 287 220 487 30 287 80 130 789 150

40 20 0 40 Miles

Map 73

Southwest Wyoming Existing Oil and Gas Development Projects

Cumulative Impact Analysis Area

N
W E
S

Southwest Wyoming Oil and Gas Development Projects

JMH CAP Planning Area

Major Roads

189
191
189
30
30
Farson
28
287
30
287
80
789
150

30 15 0 30 Miles

Map 74

Southwest Wyoming Oil and Gas Development Projects

Cumulative Impact Analysis Area

N
W E
S

Water Resources CIAA*

JMH CAP Planning Area

Major Roads

*Boundary is based on 6th order watersheds.

Sweetwater River

28

191

Farson

Big Sandy River

Killpecker Creek

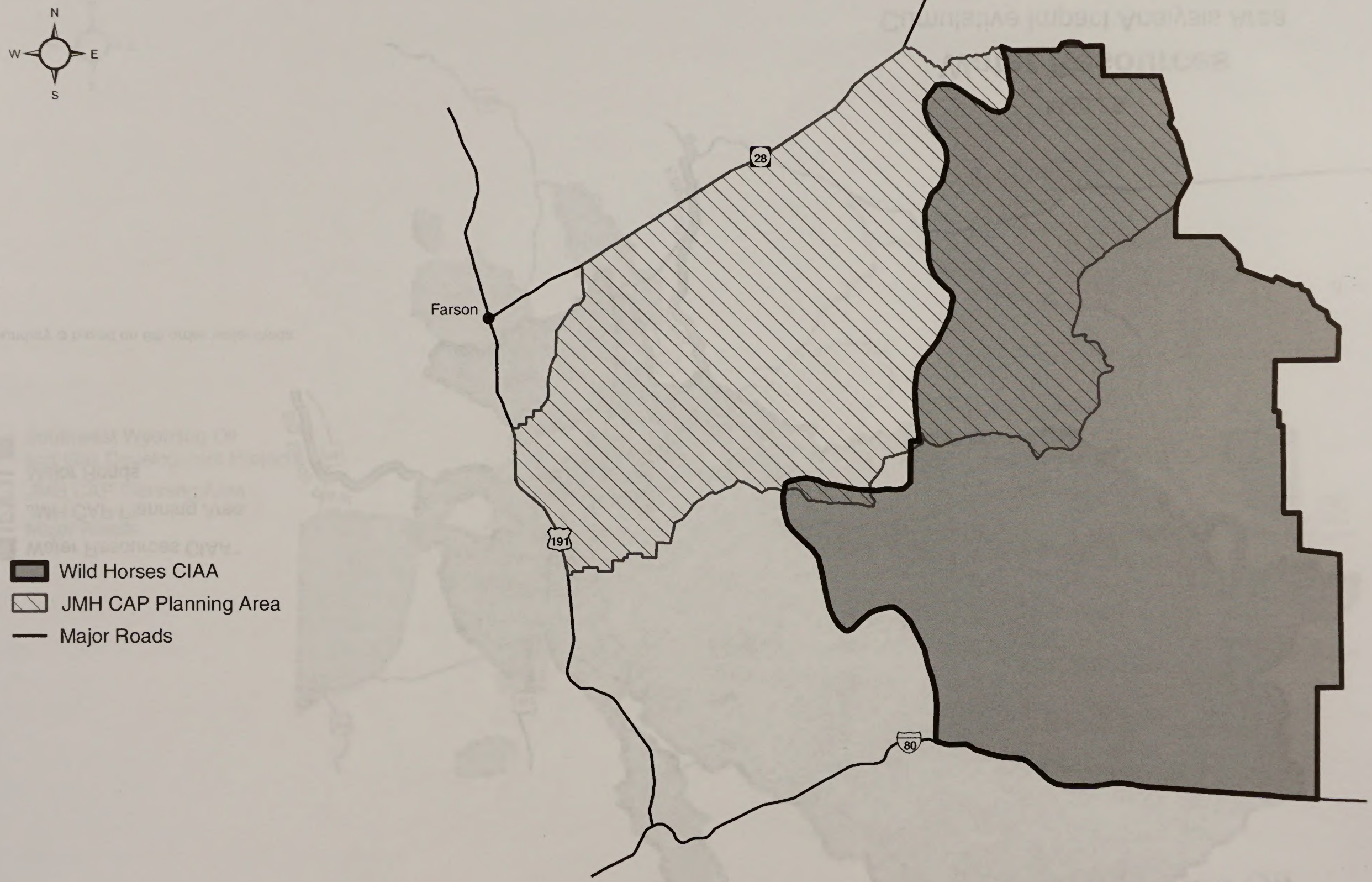
80

10 5 0 10
Miles

Map 75

Water Resources

Cumulative Impact Analysis Area



Map 76

Wild Horses

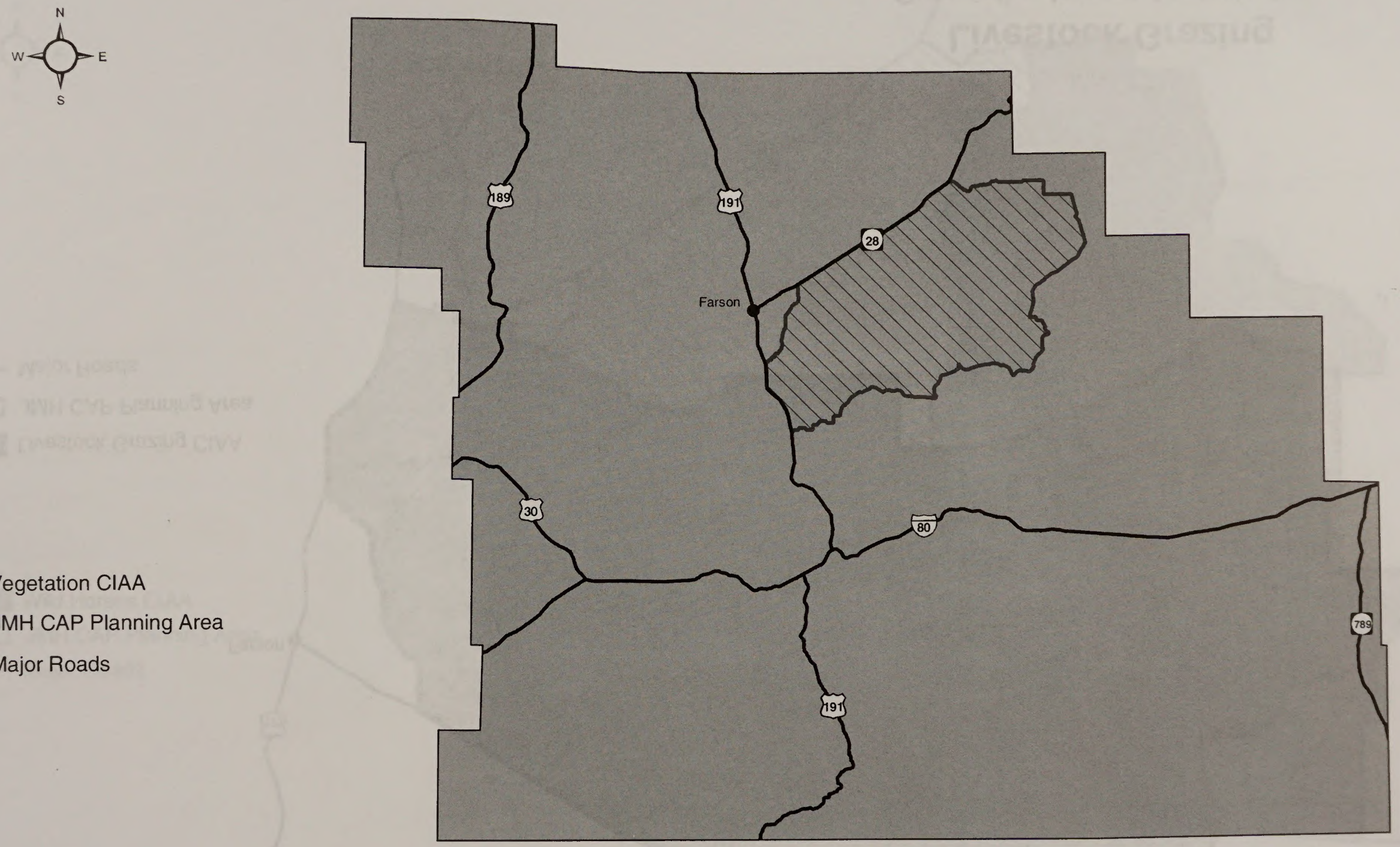
Cumulative Impact Analysis Area



Map 77

Livestock Grazing

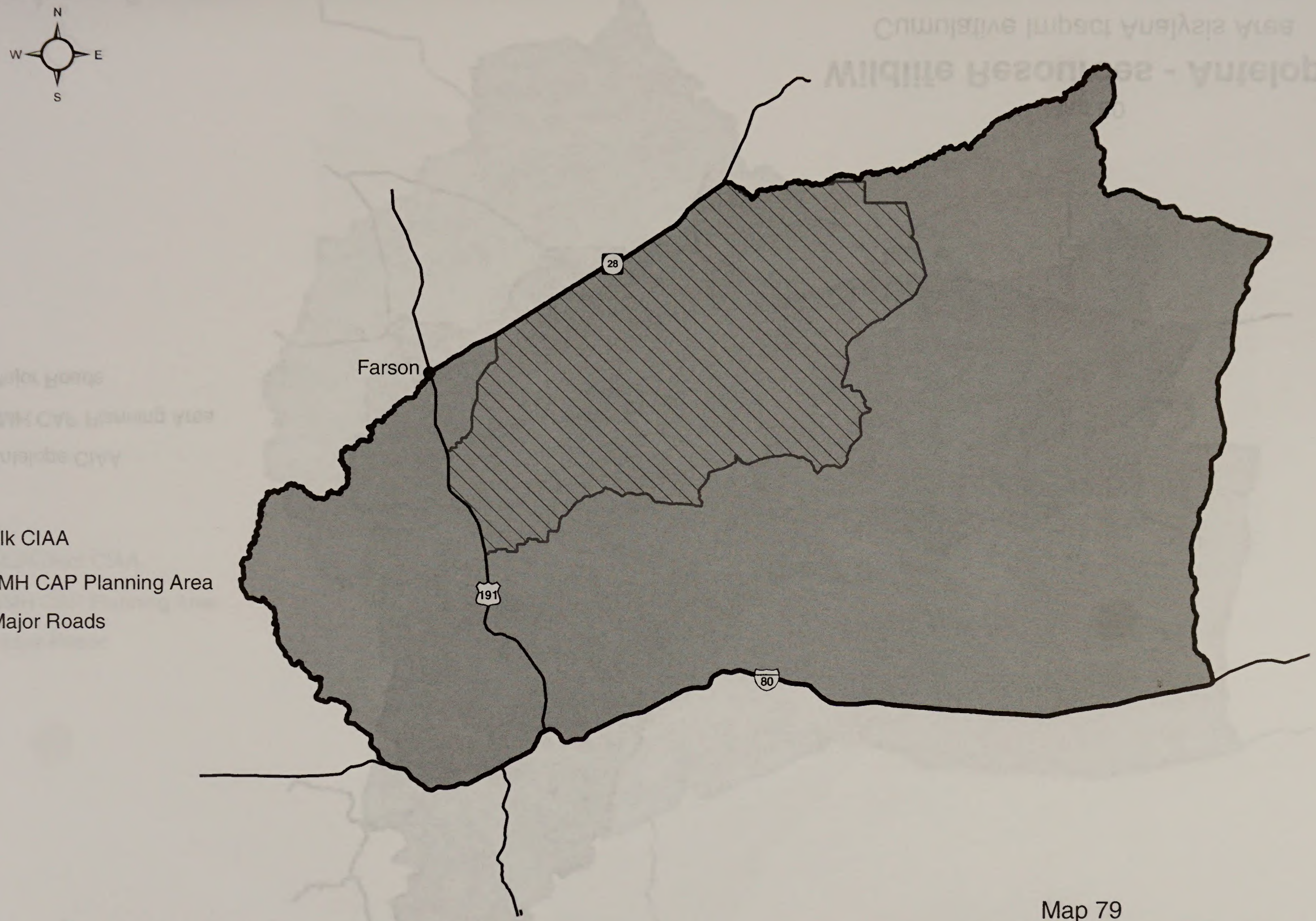
Cumulative Impact Analysis Area



Map 78

Vegetation Resources

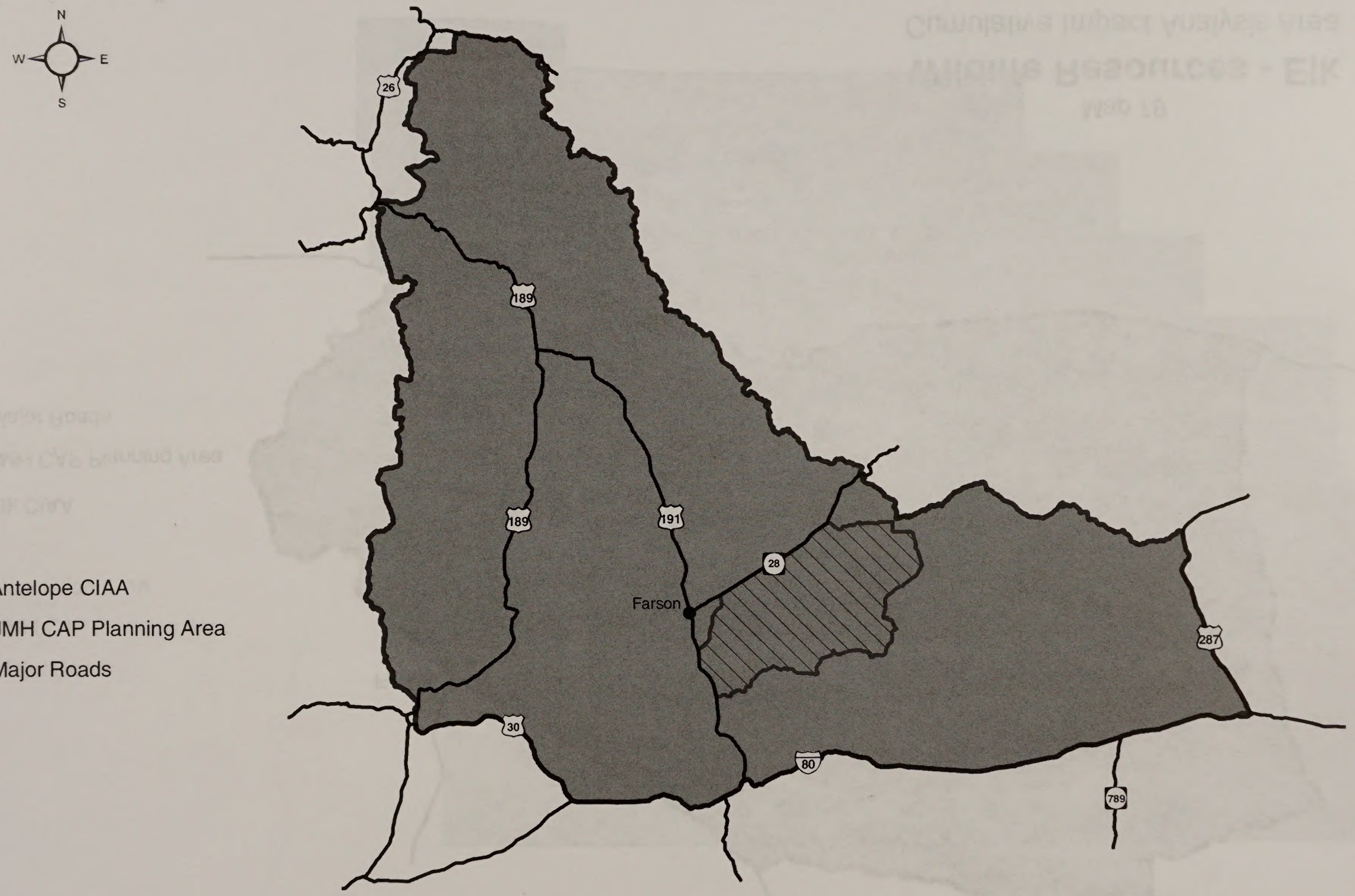
Cumulative Impact Analysis Area



Map 79

Wildlife Resources - Elk

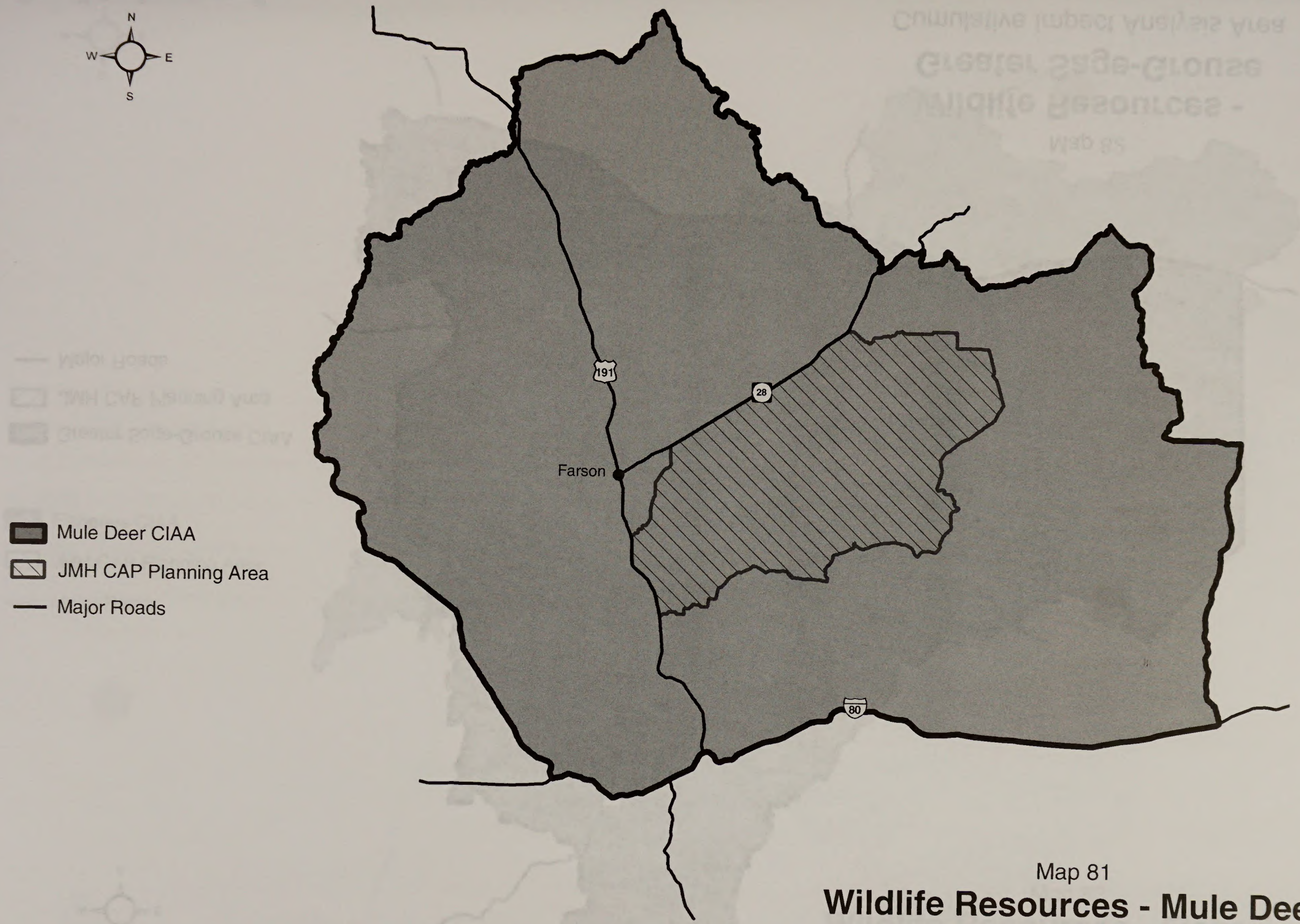
Cumulative Impact Analysis Area



Map 80

Wildlife Resources - Antelope

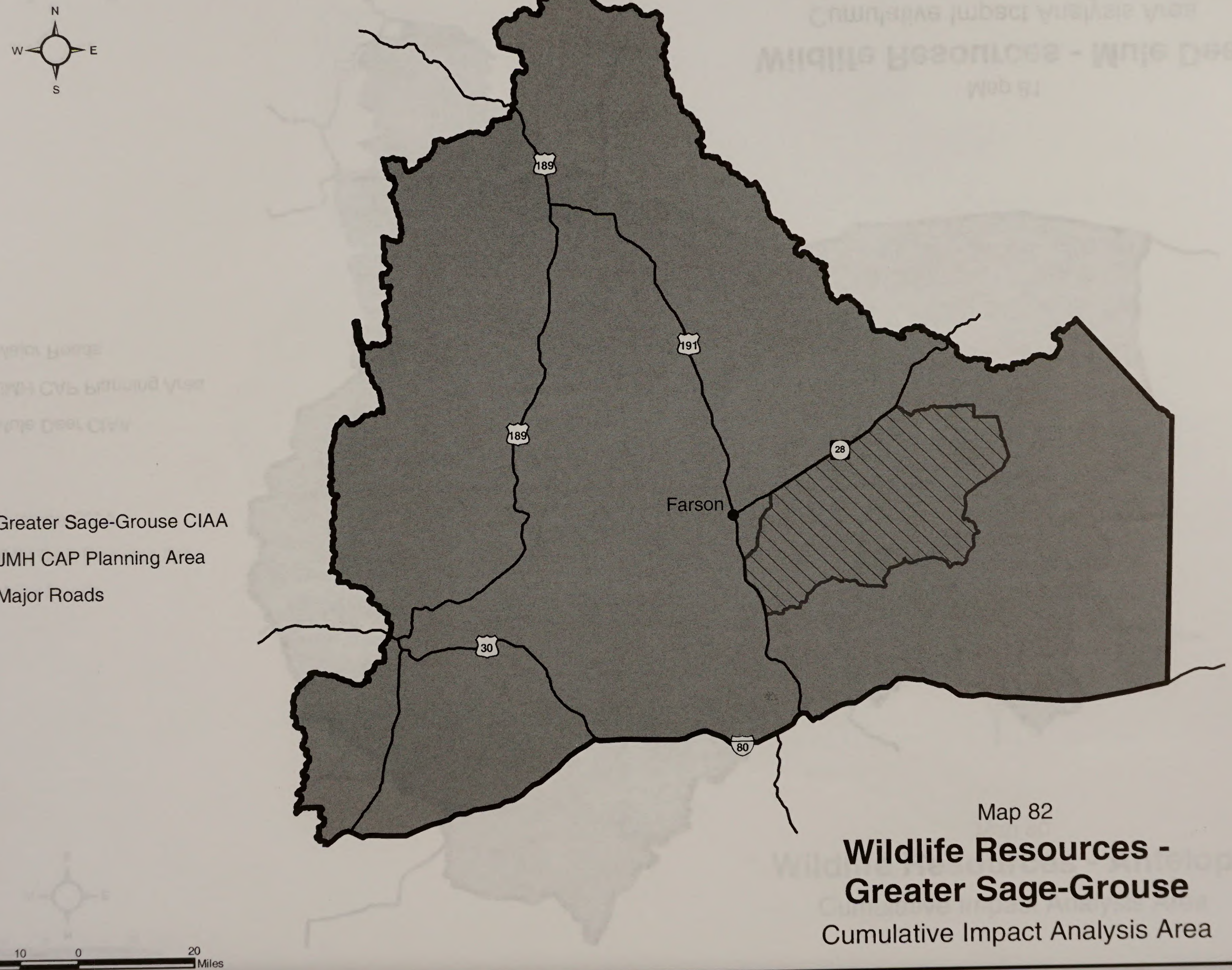
Cumulative Impact Analysis Area



Map 81

Wildlife Resources - Mule Deer

Cumulative Impact Analysis Area



Map 82

Wildlife Resources - Greater Sage-Grouse

Cumulative Impact Analysis Area



Map 83

Wildlife Resources - Fisheries

Cumulative Impact Analysis Area



Map 84

Heritage Resources

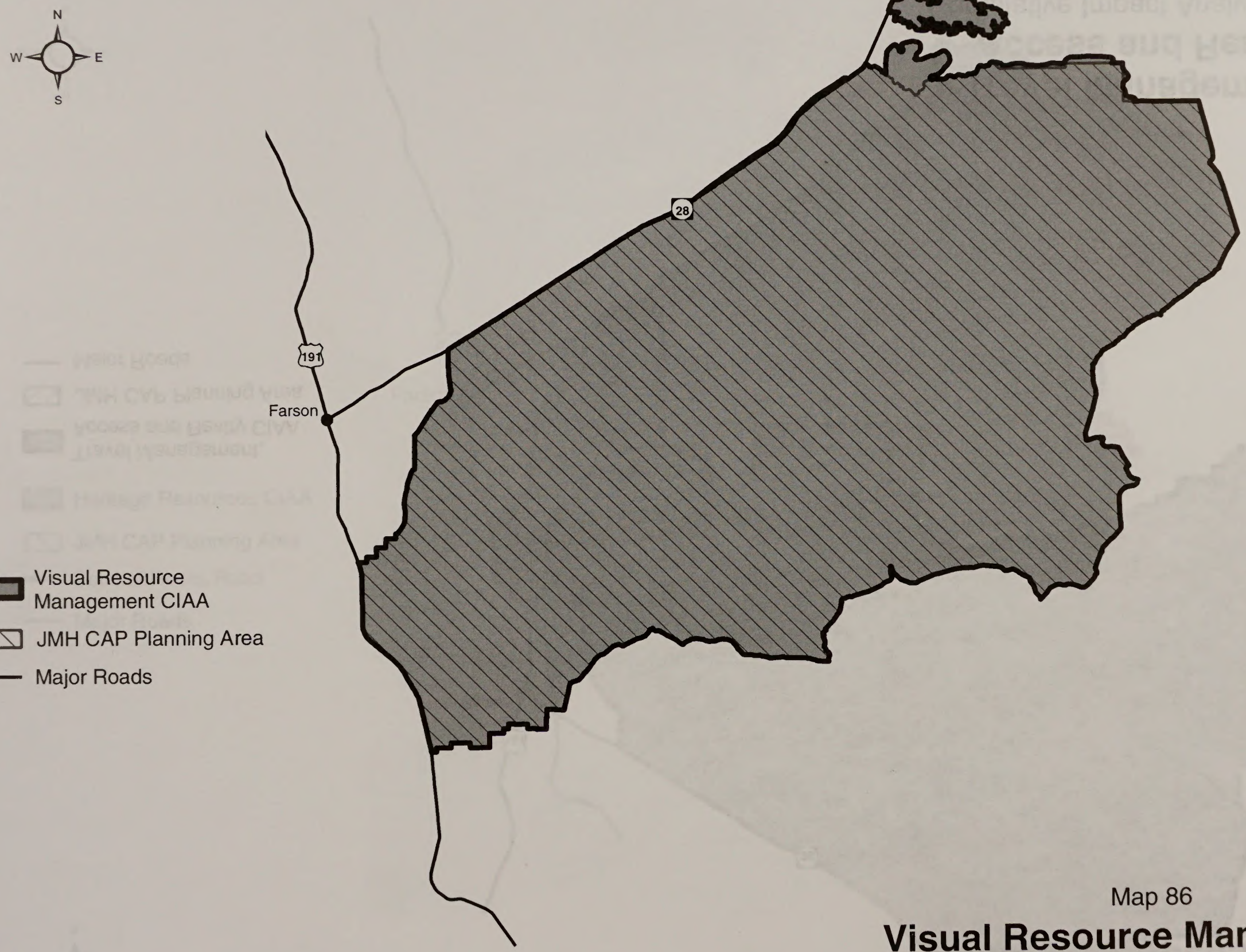
Cumulative Impact Analysis Area



Map 85

Travel Management, Access and Realty

Cumulative Impact Analysis Area



Map 86

Visual Resource Management

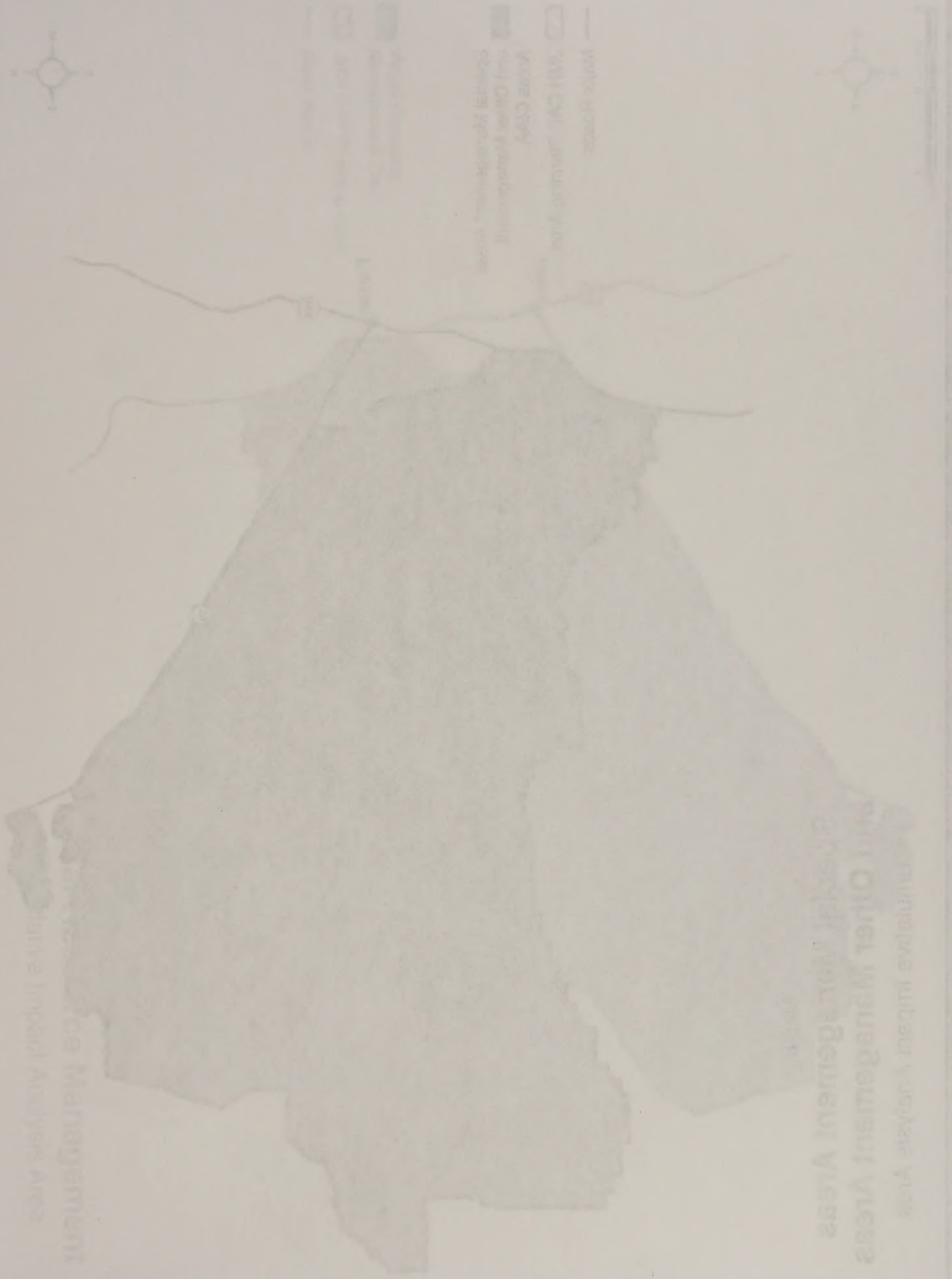
Cumulative Impact Analysis Area



Map 87

Special Management Areas and Other Management Areas

Cumulative Impact Analysis Area



APPENDIX 1—PLANNING CRITERIA

PLANNING CRITERIA

Planning criteria are the constraints, or ground rules, that will guide the planning effort for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) and that will guide the scope of the various management prescriptions and alternatives to be considered and analyzed. Planning criteria serve the following purposes:

1. To ensure that the planning effort is focused on the issues, follows and incorporates legal requirements, and addresses management of all public land resources and land uses in the planning area.
2. To ensure that plan preparation is accomplished efficiently.
3. To identify the scope and parameters of the planning effort for the decision maker, the interdisciplinary team, and the public.

The JMH CAP will focus on the potential environmental consequences of reasonably foreseeable development and other land use activities in the planning review area, such as staking of mining claims and mineral exploration and development, construction of rights-of-way, and transfer or patenting of public lands through mineral patents, recreation uses, and livestock grazing. Other criteria in relation to reasonably foreseeable development include vehicular use and transportation, and construction of range and watershed improvement projects and recreation site developments.

Criteria Concerning Public Query on the Use of Draft Guidance in the Interim of Finalization of this Document

Draft guidance is not used in land use plans. The planning process provides for inclusion of new guidance through updates, modifications, and changes to the land use plan at such time that new guidance is finalized. In this way land use plans are kept current and up to date. Not all new guidance necessitates an update, modification, or change to the land use plan. In addition draft guidance does not always become finalized or it is not always finalized identical to the draft material. Once draft guidance is finalized, the land use plan is reviewed for conformance with the guidance. If the plan is in conformance, a maintenance action should be completed to recognize the new guidance. If the land use plan is determined not to be in conformance with the new guidance, an environmental analysis is completed and an amendment (modification or change) to the land use plan is completed if appropriate (BLM Handbook H-1601-1).

Criteria for Hydrocarbon Leasing and Development

As an aid to developing alternatives for the environmental impact statement (EIS), special criteria were developed relative to the leasing and development of carbon-based minerals (oil, gas, and coalbed methane). By inference from available geologic information, reports of past production, and information from the minerals industry, parts of the planning area were determined to have a high potential for the occurrence of oil and gas and to have high and moderate potential for the occurrence of coal and related coalbed methane.

This information, along with analysis of past mineral leasing and development activity and production, was then utilized to project reasonably foreseeable development scenarios for carbon-based mineral development. These scenarios are used as assumptions to aid in the analysis of impacts. Because they are

so broad, these classifications for resource occurrence and development potential, projected for planning purposes, are not appropriate for, and are not intended to predict, future activity or the exact locations of new discoveries.

Criteria for Locatable Minerals

Areas of potential for occurrence of locatable minerals were developed from the Green River Resource Management Plan (RMP) to help analyze effects of other land and resource uses and management actions on locatable mineral development, and vice versa. These areas of potential were refined for the JMH CAP. The evaluation is based on a representative analysis by inference and does not imply that there may or may not be undiscovered locatable minerals of economic value in the planning area.

Areas identified as having potential for the occurrence of locatable minerals include areas with current or past mining activity, areas where mining claims are located, areas where mineral occurrence has been proved from some type of activity (such as stratigraphic test holes), and areas where geologic formations are known to include locatable mineral occurrences (zeolite, gold, jade, etc.).

Criteria for Use of Wyoming BLM Mitigation Guidelines

A consistent aspect of the activity planning process will be considering the application of mitigation or protective measures for surface disturbing or disruptive activities. These would be based on the "Wyoming BLM Mitigation Guidelines for Surface Disturbing and Disruptive Activities." Mitigation or protective measures would be applied as conditions of land and resource use for the following purposes:

1. To minimize soil movement
2. To minimize disturbance of vegetation in sensitive areas, such as riparian areas
3. To protect important cultural and paleontological resources, recreational values, wildlife and wildlife habitat resources, and threatened or endangered plant and animal species
4. To protect visual quality.

Criteria for Healthy Rangelands

Another consistent aspect of the activity planning process will be to consider the application of measures to achieve the four fundamentals of rangeland health. These would be based on the "Wyoming Standards for Healthy Rangelands." Appropriate management prescriptions and protection measures would be applied. The four fundamentals are as follows:

1. Watersheds are functioning properly
2. Water, nutrients, and energy are cycling properly
3. Water quality meets state standards
4. Habitat for special status species is protected.

Criteria for Livestock Grazing Management

Another consistent aspect of the activity planning process will be to consider the application of measures to meet the "Wyoming Guidelines for Livestock Grazing Management" and the implementation plan for the "Wyoming Standards for Healthy Rangelands" and "Guidelines for Livestock Grazing Management." Appropriate management prescriptions and protection measures would be applied. However, such prescriptions may not be allotment-specific. Site-specific measures would be applied on an allotment

basis after a site-specific standards and guidelines review, and in developing allotment management plans.

Some issues that directly or indirectly apply to the planning area were raised and addressed in the Green River RMP planning effort. These same issues will not be raised again or addressed in the EIS for the JMH CAP. These issues include:

Criteria for the Coal Screening/Planning Process

The coal screening/planning process for management of federal coal resources in the planning area was conducted in the Green River RMP planning process. A complete application of the coal screening process, including application of the Coal Unsuitability Criteria (43 CFR 3461) (documented in Appendix 3-2 of the RMP), was completed in the course of the Green River RMP planning effort. The coal screening/planning process will not be revisited in the JMH CAP planning effort. However, potential coalbed methane development in the area will be considered.

Criteria for Wilderness Study Areas

Interim management of wilderness study areas (WSA) will not be addressed in the JMH CAP. Management of WSAs within the planning area is addressed in the Rock Springs District Final Wilderness EIS (August 1990). Within the planning area, there are approximately 117,100 acres of Bureau of Land Management (BLM) administered public land in WSAs, of which approximately 70,000 acres have been recommended for designation as wilderness and are pending congressional decision (Map 14). When Congress makes decisions regarding the WSAs in the planning area, they will be incorporated into the Green River RMP. Until Congress acts, these WSAs will be managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI 1987). No other potential wilderness areas in the planning area have been identified for wilderness review.

Should Congress designate any of the WSAs, either partially or wholly, as wilderness, management of the designated areas will be in conformance with the Wilderness Act of 1964 and as described in the above-mentioned Wilderness EISs and/or in the designation legislation. Wilderness activity plans will be prepared for any wilderness areas designated by Congress.

Should Congress not designate as wilderness part or all of any of the WSAs, the nondesignated areas will lose their identity as WSAs and will be managed along with the adjoining land area as prescribed in the approved Green River RMP.

This CAP will not address management prescriptions specifically for the WSAs. If WSAs were included in an area with management prescriptions that are more stringent than wilderness management prescriptions, the WSA would be managed under those more stringent prescriptions. Where this occurs, it is to be assumed that the more stringent management prescriptions would apply, whether or not the areas involved were designated as wilderness.

Criteria for Areas of Critical Environmental Concern

The relevance and importance criteria for areas of critical environmental concern (ACEC) designation, found in BLM Manual 1613, were applied and documented in the Green River RMP EIS. These criteria and their application, and the determinations made in the RMP concerning the designation or nondesignation of ACECs, will not be revisited in developing the JMH CAP. However if new areas are identified that meet the ACEC relevance and importance criteria, this information will be included in the EIS for the JMH CAP.

Criteria for Wild Horses

The Green River RMP EIS considered appropriate management levels for wild horses. These will not be revisited in developing the JMH CAP.

Criteria for Wild and Scenic Rivers

The Green River RMP EIS identified BLM-administered public lands along waterways that meet the Wild and Scenic Rivers Act suitability factors, to be given further consideration for inclusion in the National Wild and Scenic Rivers System. Wild and scenic river reviews will not be revisited in developing the JMH CAP.

Criteria for Livestock Grazing

The Green River RMP EIS addressed and provided for livestock grazing management. As a result, the JMH CAP will consider some level of grazing use in all alternatives, and a no grazing alternative will not be revisited in developing the JMH CAP.

General Criteria and Considerations For Alternative Formulation

The following factors will be considered in one or more of the alternatives of the JMH CAP EIS:

- Fire management and fire suppression options
- Intensive management of cultural and historic resources, including rock art occurrences, historic trails, and Native American respected places
- Various types and levels of vegetation uses, including wildlife habitat, watershed protection, and livestock grazing
- Minerals exploration and development, authorizations related to rights-of-way and other land and realty actions, off-highway vehicle (OHV) use, and other activities that may result in surface disturbance
- Opportunities for land disposal or acquisition that could be useful in meeting goals for resource manageability and condition
- Acquisition of access for providing reasonable levels of resource use for the public and for resource development and manageability
- Recommendation of protective withdrawals needed to improve resource manageability
- Identification of right-of-way concentration areas, exclusion areas, and avoidance areas to provide for development needs and protection of resource values
- Various levels of livestock grazing
- Management of recreational use
- Protecting unique and nonrenewable geological, cultural, paleontological, and recreational values
- Management options for protecting or enhancing wetlands and riparian areas
- Big game population goals of the Wyoming Game and Fish Department (WGFD)

- Protection and enhancement of habitat for sensitive or important wildlife and plant species, including protection of key elk and deer habitat
- Protection of recovery and essential habitat for threatened or endangered wildlife and plant species.

Criteria for Effects To Be Considered

Effects in all alternatives generally use existing data for analysis. The following types of effects will be addressed in identifying and analyzing the environmental consequences of the planning alternatives:

- Effects of wild horse use and management
- Effects of surface disturbing land uses and other disruptive human activities on air quality, cultural resources, recreational opportunities, watershed, and wildlife resources
- Effects caused by livestock grazing, disposal or acquisition of land, and OHV use or restrictions on OHV use
- Effects of fencing on wildlife movement and migration
- Effects of all types of land and resource uses on the vegetation resource
- Economic impacts of land use restrictions on economic sectors that are heavily dependent on the use of public lands and resources (for example, minerals exploration and development, livestock grazing, and recreation activities).

Criteria for Selection of the Proposed JMH CAP

Answers to the following questions will be used to guide selection of the Proposed JMH CAP:

- Does/Do the alternative(s) meet guidelines for reduction of sedimentation and salinity, as stated in water quality plans of the State of Wyoming and the Environmental Protection Agency (EPA)?
- What levels of land use restrictions are needed to provide adequate protection of resource values?
- Does/Do the alternative(s) retain reasonable accessibility of public lands for purposes of public access, public land use, and resource development?
- In proposing resource allocations that would affect the availability of lands for mineral development, has the BLM considered the potential of those lands for occurrence and development of energy and mineral resources?
- Is/Are the alternative(s) consistent with plans, programs, and policies of other federal agencies, state and local governments, and Indian tribes?
- Is/Are the alternative(s) consistent with the objectives established in the Green River RMP?

ACEC Criteria

As part of the process for developing the JMH CAP, BLM planning team members reviewed all BLM-administered public lands in the planning area to determine whether any areas should be considered for designation as an ACEC. Existing ACECs were not reviewed to determine whether any existing ACEC designations should be modified or terminated, as this task was recently accomplished and documented

through preparation of the Green River RMP. Only BLM-administered public lands (i.e., public land "surface") can be considered for ACEC designation.

To be eligible for designation as an ACEC, an area must meet the relevance and importance criteria described in 43 CFR 1610.7-2 and BLM Manual 1613.

Relevance and Importance are defined as follows:

- **Relevance:** There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.
- **Importance:** The above-described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to life or property.

Relevance

An area meets the Relevance criterion if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).
2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity).
3. A natural process or system (including but not limited to endangered, nonsensitive, or threatened plant species; rare, endemic, or relic plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features).
4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process to have become part of a natural process.

Importance

An area meets the Importance criterion if it meets one or more of the following:

1. Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change
3. Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of the Federal Land Policy and Management Act (FLPMA)
4. Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare
5. Poses a significant threat to human life and safety or to property.

Table A1-1 shows the areas that were identified in the review, and the BLM relevance and importance determinations that were made.

The Green River RMP Interdisciplinary Team identified potential expansions for two of the existing ACECs, to be addressed during the JMH CAP planning effort.

Based on the criteria, expansions were reviewed for two areas. The existing ACECs were not reevaluated. One of the proposed expansions would add an additional species to the existing Special Status Plant Species ACEC. The other expansion would add the wildlife habitat and migration corridors of the core area to the Steamboat Mountain ACEC.

THIS PAGE INTENTIONALLY LEFT BLANK

Table A1-1. Evaluation of ACEC Relevance and Importance Criteria

Existing or Proposed ACECs	Relevance Criteria (resources)	Importance Criteria	Recommended	Comments
SPECIAL STATUS (CANDIDATE) PLANT SPECIES (Proposed Expansion) Large-fruited bladderpod *(Lesquerella macrocarpa)* Nelson's milkvetch (*Astragalus nelsonianus*) Meadow pussytoes (*Antennaria arcuata*)	Criterion 3	Criteria 1, 2, 3	No	Meets the relevance criteria for natural processes or systems. Meets importance criteria for more than locally significant qualities; fragile, sensitive, rare, vulnerable to adverse change; and warrants protection to satisfy national priority concerns and carry out the mandates of FLPMA. Populations of this plant are found outside the planning area. The status of this plant has not changed since completion of the Green River RMP. The management prescriptions in the Green River RMP are sufficient to provide the needed protection for these species, and special management emphasis or ACEC designation is unnecessary.
STEAMBOAT MOUNTAIN (Proposed Expansion)	Criteria 1, 2, 3	Criteria 1, 2	Yes	Meets the relevance and importance criteria for wildlife, cultural values of national significance, natural systems, unique habitat features found nowhere else in the Field Office Administrative Area, and values needing special management emphasis to be effectively managed. Includes the highest concentration and overlap of unique habitat features, natural systems, and cultural values. These include a portion of the sand dunes stabilized by the Basin Big Sagebrush/ lemon scurfpea plant community and the Native American respected places of Indian Gap and portions of the Indian Gap Trail.

Table A1-1. Evaluation of ACEC Relevance and Importance Criteria (Continued)

Existing or Proposed ACECs	Relevance Criteria (resources)	Importance Criteria	Recommended	Comments
BASIN BIG SAGEBRUSH/LEMON SCURFPEA (Outside Steamboat Mountain ACEC proposed expansion area)	Criterion 3	Criteria 1, 2	No	Listed in WYNDD reports as rare and unique and worth special protection; fragile habitat; also used extensively by a desert elk herd. Meets the relevance criteria for natural processes or systems. Meets the importance criteria for more than locally significant qualities that give the area special distinctiveness, and cause for concern because of qualities that make the area fragile, sensitive, rare, and vulnerable to adverse change. Compared to the Steamboat Mountain ACEC proposed expansion area, the vegetative habitat outside the proposed expansion area does not need equal special management emphasis. See discussion of the expansion of the Steamboat Mountain ACEC.

Table A1-1. Evaluation of ACEC Relevance and Importance Criteria (Continued)

Existing or Proposed ACECs	Relevance Criteria (resources)	Importance Criteria	Recommended	Comments
CUSHION PLANT COMMUNITY	Criteria 2, 3	Criteria 1, 2, 3	No	Listed in WYNDD reports as fragile, unique, and worth special protection. Is also a special habitat used by the mountain plover, a BLM sensitive species. Meets the relevance criteria for wildlife resource and natural processes or systems. Meets the importance criteria for more than locally significant qualities that give the area special distinctiveness and cause for concern because of qualities that make it fragile and vulnerable to adverse change, warranting protection to satisfy national priority concerns and to carry out the mandates of FLPMA. The area can be effectively managed through the proposed management decisions that cover this area without the need for special management emphasis or ACEC designation.
PINNACLES GEOGRAPHIC AREA	Criteria 1, 3	Criteria 1, 2	No	Meets the relevance criteria for natural processes or systems. Meets the importance criteria for more than locally significant qualities and for qualities that make the area fragile, sensitive, rare, and vulnerable to adverse change. The proposed management prescription for the area is sufficient to effectively manage the area, and special management emphasis or ACEC designation is unnecessary.

Table A1-1. Evaluation of ACEC Relevance and Importance Criteria (Continued)

Existing or Proposed ACECs	Relevance Criteria (resources)	Importance Criteria	Recommended	Comments
PALEOSOL DEPOSITION AREA	Criteria 1, 3	Criteria 1, 2	No	Meets the relevance criteria for significant cultural resources; eligible for inclusion in NRHP under Criteria D (36 CFR 60), for scientific information presence and potential. The archeological and geological deposits are relevant for the study of environmental change during the transition from the Pleistocene to the Holocene geological age and the study of human adaptation to these natural systemic changes over time. Meets the importance criteria for scientific qualities pursuant to nationally significant issues in archeological science. The circumstances (e.g., archeological and geological strata) of these qualities are fragile, sensitive, rare, exemplary, unique, and irreplaceable. The archeological and geological deposits from the Pleistocene to Holocene transition are unique and in an excellent state of preservation. Considering that the real values of these deposits can only be determined through careful and scientific excavation, the legal and regulatory requirements for those activities and the proposed management prescriptions for the area are sufficient to effectively manage the area. Special management emphasis or ACEC designation is unnecessary.

APPENDIX 2—GREEN RIVER LAND USE PLAN(S) OBJECTIVES AND ACTIONS APPLICABLE TO THE JMH CAP PLANNING AREA ON BLM-ADMINISTERED PUBLIC LANDS

Resource	Objectives and Actions
AIR QUALITY MANAGEMENT	AIR-1–MANAGEMENT OBJECTIVES: (1) To maintain and, where possible, enhance present air quality levels; (2) to protect public health and safety and sensitive natural resources; and (3) within the scope of BLM's authority, minimize emissions which may add to acid rain, cause violations of air quality standards, or reduce visibility.
	AIR-2–MANAGEMENT ACTIONS: Special requirements to alleviate air quality impacts will be identified on a case-by-case basis and included in use authorizations (including mineral leases). Special requirements include limiting emissions and restricting spacing of project locations. Industrial plant facilities could be located where they minimize air quality impacts.
	AIR-3–BLM will continue to participate with other agencies in the collection of air quality data and air quality pollution analysis.
	AIR-4–Surface disturbing activities will be managed to prevent violation of air quality regulations. Construction and surface disturbing activities will be designed with dust control measures to reduce general air quality impacts and visibility impacts.
CULTURAL AND PALEONTOLOGICAL MANAGEMENT	CULT-1–MANAGEMENT OBJECTIVES: (1) To expand the opportunities for scientific study, and educational and interpretive uses of cultural and paleontological resources; (2) To protect and preserve important cultural and paleontological resources and/or their historic record for future generations; and (3) To resolve conflicts between cultural/paleontological resources and other resource uses. Of particular concern are significant sites of historic or prehistoric human habitation, sites demonstrating unique ethnic affiliation, places having traditional cultural significance to Native Americans, and vertebrate fossil localities.
Cultural Resources	CULT-2–MANAGEMENT ACTIONS: Sites eligible for or listed on the National Register of Historic Places (NRHP) will be managed for their local, regional, and national significance under the guidelines of the National Historic Preservation Act (especially sections 106 and 110) and the Archeological Resources Protection Act (ARPA). These sites will be managed to ensure against adverse effects through proper mitigation if disturbance or destruction is not avoidable. Management prescriptions for sites that are not eligible for the NRHP will be determined on a case-by-case basis according to values involved.
Congressionally Designated Historic Trails (and associated historic sites)	CULT-3–BLM will cooperate with the National Park Service in implementing the Oregon/Mormon Pioneer National Historic Trails Management Plan.
	CULT-4–Geophysical activities such as shotholes, blasting, and vibroseis locations could generally be allowed provided they are at least 300 feet from the trail, do not occur directly on the trail, and a site-specific analysis determines that visual intrusions and adverse effects will not occur. Trails are not available for use as industrial access roads. Blading of historic trails is not allowed unless necessary to protect life or property.

Resource	Objectives and Actions
	CULT-5–The area within one-quarter mile or the visual horizon (whichever is less) of any contributing trail segment will be an avoidance area for surface disturbing activities.
	CULT-6–Motorized vehicles, such as those used for geophysical exploration, or large heavy vehicles such as buses used in recreational tours or similar activities, could cross and drive down the trails provided a site-specific analysis determines that no adverse effects will occur.
Other Historic Trails and Historic Sites	CULT-7–Management of historic roads and trails that are eligible for the NRHP but are not congressionally designated will generally be the same as for designated trails, including a one-quarter mile protective setback on either side of the trails.
	CULT-8–Geophysical activities such as shotholes, blasting, and vibroseis locations could generally be allowed provided they are at least 300 feet from the trail, do not occur directly on the trail, and a site-specific analysis determines that visual intrusions and adverse effects will not occur.
	CULT-9–No blading will be allowed on any historic trail unless necessary to protect life or property. Historic trails are not available for use as industrial access roads.
	CULT-10–Various Expansion Era (i.e., 1870–1940) roads will be managed according to their historical context. Management prescriptions similar to those in the Oregon/Mormon Pioneer National Historic Trails Management Plan will be applied, although the one-quarter-mile protective setback might not always be applied.
Rock Art Sites	CULT-11–Significant rock art sites and their surrounding viewsheds (within one-half mile) will be managed to protect their cultural and historic values. Surface disturbing activities and visual intrusions will be prohibited within these areas if they would adversely affect these values.
	CULT-12–The vistas surrounding these significant rock art sites (i.e., the actual area that can be seen from the rock art sites, within on-half mile) are avoidance areas for surface disturbing activities and visual intrusions. Most surface disturbing and other activities visible within these vistas will be prohibited if they would adversely affect rock art site values. Some activities within one-half mile of the rock art, but not visible from the rock art panels, may be allowed. Other kinds of activities, such as audible disturbances, may not be allowed if they would adversely affect the sacred Native American values at the rock art sites.
	CULT-13–All other rock art sites will be managed on a case-by-case basis according to resource values.
Other Cultural Sites and Areas	CULT-14–Archeological data will be synthesized in the Greater Nitchie Gulch concentrated oil and gas development area, and the area will be managed with the objective of facilitating surface disturbing or disrupting activities without sacrificing significant archeological values.
	CULT-15–The Tri-Territory Marker is an exclusion area and is closed to (1) surface disturbing activities that could adversely affect it and (2) exploration and development of locatable minerals. A withdrawal will be pursued. The site will be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.

Resource	Objectives and Actions
	CULT-16–The Eden-Farson, Finley, Krmpotich, and Morgan archeological sites, and similar sites identified in the future, will be managed to preserve and record their archeological information and scientific values. Site interpretation for these areas would not be developed for public use.
Human Burial Locations	CULT-17–All known human burial sites will be protected regardless of their ethnic affiliation. Management of Native American burial sites will take into account recommendations from appropriate tribes. Data recovery will not be the preferred method for mitigation of adverse effects to any burial location.
Other Cultural Resources and Cultural Program Management Actions	CULT-18–Other cultural sites would be managed on a case-by-case basis according to their resource values.
	CULT-19–Coordination and consultation with Native American tribes would be conducted to identify appropriate management prescriptions for areas significant to the tribes for traditional cultural purposes.
	CULT-20–Exchanges for acquisition and cooperative agreements will be pursued to enhance management of cultural resources.
Paleontological Resources	CULT-21–Significant paleontological resources will be managed for their scientific and educational values and in accordance with 43 CFR 3600, 43 CFR 3622, and 43 CFR 8365.
	CULT-22–Collecting of vertebrate fossils may be allowed with written authorization, which may be issued only to an academic, scientific, governmental, or other qualified institution or individual. Collection of common invertebrate fossils and petrified wood for hobby purposes is allowed on public lands and is regulated under 43 CFR 3600, 43 CFR 3622, and 43 CFR 8365.
	CULT-23–Surface disturbing activities that affect known vertebrate fossil localities will be considered in site-specific analyses, and potential adverse effects will be mitigated.
	CULT-24–The Steamboat Mountain and Boars Tusk-Killpecker Sand Dunes areas will be managed to protect their unique geological and ecological features and to provide for public interpretation of these features. The road around Boars Tusk is closed.
FIRE MANAGEMENT	FIRE-1–MANAGEMENT OBJECTIVES: (1) To use prescribed fire as a management tool to help meet multiple use resource management goals; and (2) To provide cost effective protection from wildfire to life, property, and resource values.
	FIRE-2–MANAGEMENT ACTIONS: Wildfire suppression will emphasize appropriate management response. Immediate control actions will be used only in cases of arson, direct threat to public safety, or a strong potential to threaten structural property.
	FIRE-3–Fire suppression actions will be based on achieving the most efficient control and allowing historical acres burned to increase. Activity plans will be developed for designated fire management areas defining specific parameters for all fire occurrences.

Resource	Objectives and Actions
	FIRE-4–Ambient air quality standards will be maintained during prescribed fire operations. FIRE-5–Heavy equipment or actions that will cause surface disturbance will be used only after a site-specific analysis has been performed and approved. Activities that cause surface disturbance will be considered on a case-by-case basis. FIRE-6–Use of chemical fire suppression agents is prohibited in rock art sites. Generally, use of chemical fire suppression agents is prohibited in special management areas unless or until a wildland fire situation analysis is completed or an activity plan for the special management areas identifies chemical suppression agents as an allowable use. FIRE-7–Wildfires occurring in forested areas will be appropriately suppressed in accord with resource values threatened, as determined on a case-by-case basis. FIRE-8–Wildfires occurring in or directly threatening a developed or active timber sale will receive priority suppression control action. Noncommercial timber stands may be included in prescribed fire activities. Standard management practices, such as pile and broadcast burning may be permitted in all forested areas. Wildfires occurring in woodland areas would be suppressed on a case-by-case basis as determined by resource values threatened. FIRE-9–A site-specific analysis will be prepared for sensitive areas such as special status plant species, cultural sites, historic trails, and areas of critical environmental concern (ACEC) to determine the appropriate suppression activity that will be acceptable.
HAZARDOUS MATERIALS MANAGEMENT	HAZ-1–MANAGEMENT OBJECTIVES: (1) To protect public and environmental health and safety on BLM-administered public lands, (2) To comply with applicable federal and state laws, (3) To prevent waste contamination due to any BLM-authorized actions, (4) To minimize federal exposure to the liabilities associated with waste management on public lands, and (5) To integrate hazardous materials and waste management policies and controls into all BLM programs. HAZ-2–MANAGEMENT ACTIONS: For BLM-authorized activities that involve hazardous materials or their use, precautionary measures will be used to guard against releases or spills into the environment. If safety hazards are identified as a result of hazardous waste spills on BLM-administered public lands, BLM would provide appropriate warnings to the public. HAZ-3–BLM-administered public land sites contaminated with hazardous wastes will be reported, secured, and cleaned up according to applicable federal and state regulations and contingency plans. Parties responsible for contamination will be liable for cleanup and resource damage costs, as prescribed in federal and state regulations.
LANDS AND REALTY MANAGEMENT	LANDS-1–MANAGEMENT OBJECTIVES: (1) To manage the public lands to support the goals and objectives of other resource programs, (2) To respond to public demand for land use authorizations, and (3) To acquire administrative and public access where necessary.
Land Ownership Adjustment	LANDS-2–MANAGEMENT ACTIONS: Disposal of public lands will be considered on a case-by-case basis. The preferred method of disposal will be land exchanges.

Resource	Objectives and Actions
	LANDS-3–Acquisition of lands will be considered to facilitate various resource management objectives. The preferred method for acquisition will be exchange. Land exchanges are considered discretionary and voluntary real estate transactions between the parties involved. Consideration will be given for exchanges for state lands in special management areas such as wilderness study areas (WSA) and ACECs.
Utility/Transportation Systems	LANDS-4–Public lands will be made available throughout the planning area for rights-of-way, permits, and leases.
	LANDS-5–The record of decision (ROD) and *Federal Register* notice for the resource management plan (RMP) will meet the criteria for public notification for linear or site rights-of-way within floodplains, as required by BLM Manual 7221, except for those associated with perennial streams. BLM will solicit public comment on site facilities or major linear rights-of-way along perennial streams unless another agency (federal, state, or local) already had solicited such comments.
	LANDS-6–Areas designated as utility windows, rights-of-way concentration areas, and existing communication sites will be preferred locations for future grants. Five windows have been identified: two east-west and three north-south. Other areas will be considered for rights-of-way on a case-by-case basis.
	LANDS-7–Areas are designated for avoidance or exclusion to rights-of-way where these uses are incompatible with management of sensitive resources and/or would have unacceptable impacts.
Withdrawals/ Classifications	LANDS-8–Withdrawals and classifications will be processed to protect important resource values. Withdrawals that no longer serve the purpose for which they were established will be revoked. Prior to revocation, withdrawn lands will be reviewed to determine whether any other resource values require withdrawal protection.
	LANDS-9–Some locatable mineral decisions are deferred in the Jack Morrow Hills (JMH) core area. In addition, determining where withdrawals from mineral location (i.e., filing of mining claims) and related mining activities will be pursued is also deferred in the core area until completion of the activity plan.
	LANDS-10–Public water reserves will be terminated where no longer needed and acquired where the need exists.
Desert Land Entries	LANDS-11–No BLM-administered public lands within the planning area are available for agricultural entry under Desert Land Entry (43 CFR 2520) because of one or more of the following factors: unsuitable soils, salinity contributions into the Colorado River System, lack of water supplies, rugged topography, lack of access, small parcel size, and presence of sensitive resources.
Access	LANDS-12–Access to public lands will be provided throughout the planning area. Where necessary and consistent with off-highway vehicle (OHV) designations, access will be closed or restricted in specific areas to protect public health and safety and to protect significant resource values.
LIVESTOCK GRAZING MANAGEMENT	LVSTK-1–MANAGEMENT OBJECTIVE: (1) To improve forage production and ecological conditions for the benefit of livestock use, wildlife habitat, watershed, and riparian areas;

Resource	Objectives and Actions
	LVSTK-2–MANAGEMENT OBJECTIVE: (2) To maintain, improve, or restore riparian habitat to enhance forage conditions, wildlife habitat, and stream quality; and
	LVSTK-3–MANAGEMENT OBJECTIVE: (3) To achieve proper-functioning condition or better on riparian areas (the first priority for vegetation management). Riparian objectives developed in the JMH Coordinated Activity Plan (CAP) will be incorporated into allotment management plans (AMPs) for allotments in the Jack Morrow area.
	LVSTK-4–MANAGEMENT ACTIONS: Public lands will be made available for livestock grazing while considering the needs of other resources.
	LVSTK-5–The kinds and seasons of livestock grazing use will continue to be licensed until monitoring, negotiation, consultation, or a change in resource conditions indicate that a modification is needed. Authorized active livestock use and existing forage reservations for wildlife and wild horses will be maintained. Historic levels and types of rangeland monitoring will continue, and additional levels and types of monitoring or evaluation may be initiated as necessary to determine any need for forage allocation adjustment.
	LVSTK-6–Interdisciplinary monitoring studies will be conducted at a level sufficient to detect changes in grazing use, trend, and range conditions and to determine whether vegetation objectives will be met for all affected resource values and uses (livestock grazing, wild horses, wildlife, watershed, etc.).
	LVSTK-7–Requests for conversions of kinds of livestock and changes in seasons of grazing use will be considered on a case-by-case basis through an environmental analysis. Such changes will be consistent with wildlife, wild horse, watershed, and riparian objectives. Special status plant species and vegetation objectives must be considered before allowing livestock conversions, and all conversions will be consistent with available forage.
	LVSTK-8–All developed and some semi-developed recreation areas are closed to livestock grazing and will be fenced to reduce conflicts between uses.
	LVSTK-9–Authorized grazing preference may be reduced in areas with excessive soil erosion and poor range condition, if allotment evaluation warrants such a change, or to provide forage for wildlife, wild horse, and recreational uses.
	LVSTK-10–All AMPs will incorporate desired plant community objectives and riparian objectives where such resources exist. Grazing systems will be designed to maintain or improve plant diversity and will be implemented on all I category allotments.
	LVSTK-11–Allotments have been placed in one of three selective management categories, identified as improve (I), maintain (M), or custodial (C) based on criteria found in Appendix 9-4 of the Green River RMP.
	LVSTK-12–AMPs will be developed or existing AMPs will be modified. Priority for AMP development and modification is I, M, and then C category allotments. All AMPs would incorporate riparian and desired plant community objectives. Riparian objectives would be developed for C category allotments where riparian values exist.

Resource	Objectives and Actions
	LVSTK-13–Site-specific analyses will be conducted where necessary to help determine how to alleviate conflicts between wildlife use, livestock grazing, and development activities.
	LVSTK-14–Range improvements will be directed at resolving or reducing resource concerns, at improving wetland/riparian areas, and at overall improvement of vegetation/ground cover (see Vegetation section). Vegetation manipulation projects would be designed to meet CAP objectives.
	LVSTK-15–Water sources may be developed in crucial wildlife winter ranges only when consistent with wildlife habitat needs. Such sources will be designed to benefit livestock, wild horses, and wildlife.
	LVSTK-16–Alternative water supplies or facilities for livestock may be provided to relieve livestock grazing pressure along stream bottoms and to improve livestock distribution.
	LVSTK-17–Construction of fences may be considered to meet management objectives. Fence construction in big game use areas and known migration routes will require site-specific analysis. Fences on public lands will be removed, modified, or reconstructed if documented wildlife or wild horse conflicts occur. Introduction of herder control will be encouraged as an alternative to fencing.
	LVSTK-18–All constructed fences will follow construction standards and design (BLM Manual 1740) and will be located and designed to not impede wild horse movement.
	LVSTK-19–Combining and splitting allotments will be considered when such action will help meet RMP objectives. Combining and splitting allotments would be considered if they would help to meet resource management objectives.
	LVSTK-20–Noxious weed infestations will be controlled through livestock management or by environmentally acceptable mechanical, chemical, or biological means. BLM will cooperate and coordinate with county weed and pest districts.
	LVSTK-21–Cooperative AMPs prepared in coordination with other agencies will be consistent with the approved Green River RMP.
	LVSTK-22–Salt or mineral supplements for livestock are prohibited within 500 feet of water, wetlands, or riparian areas unless analysis shows that watershed, riparian, and wildlife objectives and values would not be adversely affected. Salt or mineral supplements are prohibited on areas inhabited by special status plant species or on other sensitive areas.
MINERALS MANAGEMENT Leasable Minerals	MINS-1–MANAGEMENT OBJECTIVES: The objective for management of BLM-administered federal minerals is to maintain or enhance opportunities for mineral exploration and development while protecting other resource values. The objective for management of oil and gas resources is to provide for leasing, exploration, and development of oil and gas while protecting other values.

Resource	Objectives and Actions
	MINS-2–Public lands within the checkerboard area are open to mineral leasing and development (to promote mineral resource recovery), with appropriate mitigation measures to be applied on a case-by-case basis.
	MINS-3–WSAs are closed to leasing in accordance with wilderness interim management requirements. This closure is not subject to a land use planning decision (nondiscretionary closure).
	MINS-4–MANAGEMENT ACTIONS: BLM-administered public lands not specifically closed are open to consideration of oil and gas leasing. The remainder of the public lands in the planning area are open to consideration for oil and gas leasing with appropriate mitigation measures.
	MINS-5–Leasing decisions on about 85,000 acres in this area are deferred until completion of the activity plan.
MINERALS MANAGEMENT Oil and Gas	MINS-7–Where maximum protection of resources is necessary, a No Surface Occupancy requirement will be imposed. Additional areas may be identified through site-specific environmental analysis and activity planning.
	MINS-8–Timing limitations (seasonal restrictions) will be applied when activities occur during crucial periods or would adversely affect crucial or sensitive resources. Such resources include, but are not limited to, soils during wet and muddy periods, crucial wildlife seasonal use areas, and raptor nesting areas. Exceptions to seasonal restrictions may be granted.
	MINS-9–Where controlled use or restrictions on specific activities are needed but do not necessarily exclude activities, controlled surface use or surface disturbance restrictions will be designed to protect those resources. These restrictions will be placed on areas where resources could be avoided or adverse effects could be mitigated.
	MINS-10–Development actions will be analyzed on a case-by-case basis to identify mitigation needs to meet RMP objectives, to provide for resource protection, and to provide for logical development. Limitations on the amount, sequence, timing, or level of development may occur. This may result in transportation planning and in limitations in the number of roads and drill pads, or in deferring development in some areas until other areas have been restored to previous uses.
MINERALS MANAGEMENT Geothermal	MINS-11–Geothermal resources are open to leasing consideration in areas that are open to oil and gas leasing consideration. Areas closed to oil and gas leasing are also closed to geothermal leasing.
	MINS-12–Exploration and development of geothermal resources are subject to application of mitigation requirements for surface disturbing activities and other activities, in the same manner as these requirements are applied to oil and gas exploration and development activities.
MINERALS MANAGEMENT Coal	MINS-13–MANAGEMENT OBJECTIVE: The objective for management of the federal coal resources in the planning area is to provide for both short- and long-range development of federal coal in an orderly and timely manner, consistent with the policies of the federal coal management program, with environmental integrity, with national energy needs, and with related demands.

Resource	Objectives and Actions
	MINS-14–MANAGEMENT ACTIONS: With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and federal coal lands in the Green River planning area, except for those lands identified as closed, are open to coal resource inventory and exploration to help identify coal resources and their development potential.
	MINS-15–About 44,990 acres of federal coal lands within the Coal Development Potential Area would be open to further consideration for coal leasing and development, with appropriate and necessary conditions and requirements for protection of other land and resource values and uses.
	MINS-16–About 218,420 acres of federal coal lands would be closed to coal exploration and sodium prospecting.
	MINS-17–The Coal Occurrence and Development Potential area is subject to continued field investigations, studies, and evaluations to determine whether certain methods of coal mining can occur without having a significant long-term impact on wildlife, cultural, and watershed resources in general, and on threatened and endangered plant and animal species and their essential habitats.
	MINS-18–Big game crucial winter ranges and birthing areas are open to further consideration for federal coal leasing and development, with a provision for maintaining a balance between coal leasing and development, and adequate crucial winter range and birthing area habitats to prevent significant adverse impacts to important big game species. This will be accomplished through controlled timing and sequencing of federal coal leasing and development in these areas. Satisfactory abandonment and adequate reclamation of mined lands in big game crucial winter ranges and birthing areas will be required before additional federal coal leasing and development is initiated in these same crucial winter ranges and birthing areas.
	MINS-19–For the protection of important rock art sites, other important cultural resource values, and important geologic and ecologic features, federal coal lands with these important values are open to consideration for further leasing and development by subsurface mining methods only. Any federal coal leasing and development on these lands will include a No Surface Occupancy requirement for any related ancillary facilities, and surface disturbing activities will be prohibited.
	MINS-20–In general, cultural sites on federal coal lands are avoidance areas for surface disturbing activities. As avoidance areas, cultural sites are open to consideration for coal leasing and development with appropriate measures to protect these resources. Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction and location of ancillary facilities, and roads and other types of rights-of-way, will be avoided if possible. In cases where it is not possible to avoid cultural sites, intensive mitigation of the surface disturbing activities (primarily excavation and other data recovery measures) will be emphasized.
	MINS-21–If necessary, appropriate buffer zones will be established to protect sites that are listed or eligible for listing on the National Register of Historic Places (NRHP). If appropriate, data recovery measures will be implemented in the context of an NRHP district to maximize efficiency of data recovery efforts.

Resource	Objectives and Actions
	MINS-22–Grouse nesting areas (sage or sharptail grouse) are open to consideration for federal coal leasing and development, with certain requirements. Exploration activities and ancillary facilities will be allowed with the following requirement:
	MINS-23–If an occupied grouse nest may be adversely affected by coal mining and related surface disturbing activities, surface uses and activities will be delayed in the area of influence for the nest until nesting is completed.
	MINS-24–Active grouse leks (sage and sharptail grouse) and the area within a quarter-mile radius of active leks, are avoidance areas for surface disturbing activities and are open to consideration for federal coal leasing and development with the following requirements:
	MINS-25–Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction of roads, and other types of rights-of-way, will be avoided in these areas if possible. In cases where it is not possible to avoid these areas, intensive mitigation of the surface disturbing activities will be emphasized.
	MINS-26–Permanent and high-profile structures, such as buildings, overhead powerlines, and other types of ancillary facilities, are prohibited in these areas.
	MINS-27–During the grouse mating season, surface uses and activities are prohibited between the hours of 6:00 p.m. and 9:00 a.m., within a half-mile radius of active leks (i.e., those leks occupied by mating birds).
	MINS-28–Wetland and riparian areas on federal coal lands are avoidance areas for surface disturbing activities and are open to consideration for coal leasing and development with the following requirements:
	MINS-29–Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction of ancillary facilities, roads, and other types of rights-of-way, will be avoided in these areas if possible. In cases where it is not possible to avoid these areas, intensive mitigation of the surface disturbing activities will be required.
Competitive Federal Coal Areas With Surface Mining Potential	MINS-30–BLM-administered public land surface overlying state-owned coal is open to further consideration for coal development with appropriate and necessary conditions and requirements for protection of the public land surface and surface resource values and uses, including big game crucial winter range, grouse leks, cultural values, geologic features, and rights-of-way (about 640 acres).
	MINS-31–BLM-administered public land surface overlying state-owned coal is subject to continued field investigations, studies, and evaluations to determine whether certain methods of coal mining can occur without having a significant long-term impact on wildlife in general, and on threatened and endangered plant and animal species and their essential habitats.
Other Leasables	MINS-32–MANAGEMENT ACTIONS: Leasing will be considered on a case-by-case basis and is subject to appropriate mitigation.

Resource	Objectives and Actions
Mineral Materials	MINS-33–MANAGEMENT OBJECTIVE: The objective for management of salable minerals (mineral materials—e.g., sand, gravel) is to provide mineral materials in convenient locations for users while protecting other resources. MINS-34–MANAGEMENT ACTIONS: Most of the planning area is open to consideration of mineral material sales and activity except for areas where such activity would cause unacceptable impacts. Areas closed are listed in Table 11 of the Green River RMP (USDI 1997). MINS-35–As sale areas, community pits, and localized common use areas become established to provide for sales of mineral materials (such as moss rock and sand), their use and management will be in conformance with other resource objectives. Adequate mine and reclamation plans for use areas will be developed. Requests from users for mineral material will be evaluated on a case-by-case basis. MINS-36–Establishment of mineral material sites will be evaluated on a case-by-case basis. MINS-37–No topsoil sale areas will be established.
Locatable Minerals	MINS-38–MANAGEMENT OBJECTIVE: The objectives for management of locatable minerals is to provide opportunities to explore, locate, and develop mining claims while protecting other resource values. MINS-39–MANAGEMENT ACTIONS: With the exception of lands withdrawn from mineral location, the planning area is open to filing of mining claims and exploration for and development of locatable minerals. MINS-40–The mineral classification withdrawals in the RMP planning area (phosphate, coal, oil shale) will be revoked. In some areas, these classification withdrawals will remain in effect until replaced with an appropriate withdrawal for other appropriate purposes (see Special Management Area section). Other withdrawals from mineral location will be pursued to provide protection to important resource value. MINS-41–Surface disturbing activities on mining claims require a notice submitted to BLM for a cumulative surface disturbance of 5 acres or less and a plan of operations for disturbances of more than 5 acres. In ACECs, WSAs, potential additions to the Wild and Scenic River System, and areas closed to OHV use, a plan of operations will be required for any surface disturbing activities, regardless of acreage involved.
Geophysical	MINS-42–MANAGEMENT OBJECTIVE: To provide opportunity for exploration of mineral resources and collection of geophysical data, while protecting other resource values. MINS-43–MANAGEMENT ACTIONS: Most of the planning area is open to consideration of geophysical activities, except where OHV use or explosive charges would cause unacceptable impacts. **Note:** Boars Tusk, Crookston Ranch, Oregon Trail, and White Mountain Petroglyphs are closed.

Resource	Objectives and Actions
	MINS-44–Geophysical activities generally will be required to conform to OHV designations and OHV management prescriptions (see Off-Highway Vehicle Management). However, geophysical exploration has been and will continue to be routinely granted site-specific authorization for OHV use subject to appropriate limitations to protect various resources identified during analysis of proposed actions. Geophysical Notices of Intent will continue to be evaluated on a case-by-case basis, and all authorizations will be issued with appropriate analysis and mitigation requirements. MINS-45–Geophysical travel through developed and semideveloped recreation sites is restricted to existing roads and trails. MINS-46–Geophysical activities will be restricted or prohibited within one-quarter mile or the visual horizon of historic trails (whichever is closer) to protect trail integrity. Vehicles used for geophysical exploration or similar activities could be allowed to cross and be driven on historic trails, provided a site-specific analysis determines that no adverse effects would occur. MINS-47–Generally, shotholes and vibroseis activity will be restricted or disallowed within 300 feet of historic and recreational trails; however, exceptions may be allowed if supported by a site-specific analysis.
OHV MANAGEMENT	OHV-1–MANAGEMENT OBJECTIVE: To provide opportunity for OHV use in conformance with other resource management objectives. OHV-2 MANAGEMENT ACTIONS: In areas designated as either "limited" to designated roads and trails, or "limited" to existing roads and trails for OHV use, motorized vehicles must stay on designated or existing roads and trails, unless allowed an exception by the authorized officer. This limitation applies to all activities involving motorized vehicles. Except for areas that are closed to OHV travel, some types of off-highway motor vehicle use may be allowed by the authorized officer provided resource damage does not occur. OHV-3–The existing open area in the Killpecker Sand Dunes would remain open. No new open areas would be established (see specific ACEC document). OHV-4–Approximately 119,890 acres are closed to OHV use to protect naturalness and outstanding opportunities for solitude, or primitive and unconfined recreation (i.e., WSAs). Where necessary, areas would be closed to OHV travel to protect other resource values and public health and safety in the areas. OHV-5–Vehicular travel in crucial and important wildlife habitats (strutting grounds, spawning beds, big game ranges, etc.) and during crucial and important periods (such as calving/fawning periods) will be restricted seasonally as necessary. OHV-6–Vehicular travel is restricted to designated roads in sensitive watersheds and in cultural site management areas. OHV-7–Generally, over-the-snow vehicle use is subject to the OHV prescriptions unless a site-specific analysis determines that exceptions can be allowed.

Resource	Objectives and Actions
	OHV-8–OHV implementation plans will be prepared as necessary and will reflect the OHV designations made in the Green River RMP. OHV implementation planning will also be a part of comprehensive activity planning efforts.
RECREATION RESOURCE MANAGEMENT	REC-1–MANAGEMENT OBJECTIVES: (1) To ensure the continued availability of outdoor recreational opportunities sought by the public while protecting other resources, (2) To meet legal requirements for the health and safety of visitors, and (3) To mitigate conflicts between recreation and other types of resource uses. Information provided by the Recreation Opportunity Spectrum will aid in identifying the types of recreation uses occurring on public lands.
	REC-2–MANAGEMENT ACTIONS: Most public lands in the planning area are open to consideration of all individual, commercial, and competitive outdoor recreation uses.
	REC-3–The Oregon Buttes, Honeycomb Buttes, and Steamboat Mountain areas will be managed to assure their continuing value for recreational opportunities. Recreation area management plans will be prepared for these areas if necessary.
	REC-4–Developed recreation sites will be managed to assure public health and safety. Undeveloped recreation sites and other recreation use areas will be managed with priority consideration for air quality, cultural resources, watershed protection, wildlife values, and public health and safety.
	REC-5–The Continental Divide National Scenic Trail is designated a special recreation management area (SRMA) to place management emphasis on enhancing recreation opportunities and to focus management on areas with high recreation values or areas where there are conflicts between recreation and other uses. The former SRMA designations (Killpecker Sand Dunes and Oregon and Mormon Pioneer National Historic Trails) are retained. The management plan for the Oregon and Mormon Pioneer Trails will be implemented. Management plans for the Sand Dunes and the Continental Divide National Scenic Trail will be developed.
	REC-6–The remainder of the project area will be managed as an extensive recreation management area (ERMA).
	REC-7–A 14-day camping limit is established on all BLM-administered public lands.
	REC-8–Special recreation permits will be considered on a case-by-case basis. Appropriate mitigation will be included in special recreation permits, commercial recreation uses, and major competitive recreation events to provide resource protection and public safety.
	REC-9–Suitable wild horse herd viewing areas may be developed to enhance public viewing of horses. Viewing areas, and a half-mile distance surrounding them, are closed to long-term or permanent intrusions and surface disturbing activities that could interfere with opportunities to view horses (e.g., structures, mineral activities, powerlines, roads, etc.). Short-term intrusions within the half-mile distance, and actions that will blend with the landscape or will benefit the intent of the wild horse herd viewing areas will be considered on a case-by-case basis.

Resource	Objectives and Actions
	REC-10–Dispersed camping is prohibited near water sources in designated areas where it is necessary to protect water quality and wildlife and livestock watering areas. Camping in other riparian areas is allowed within 200 feet of water. Areas will be closed to camping if resource damage occurs. REC-11–Development of permanent recreation sites and facilities in undeveloped recreation use areas will be considered, provided proper mitigation and exceptions to Executive Order 11988 apply. The area within 500 feet of riparian areas and floodplains is an avoidance area for recreation site facilities. Exceptions may be considered following a site-specific analysis. An adverse impact to riparian areas and water quality is prohibited. Water sources at undeveloped recreation sites will be monitored. If the water is not potable, signs will be posted. REC-12–Vegetation buffer strips will be maintained between developed recreational facilities and surface water. REC-13–Recreation site development projects and access routes along intensively used streams and reservoirs will be managed to maintain or improve wetland habitat conditions. REC-14–Surface disturbing activities are prohibited within a quarter-mile of recreation sites, unless such activities are determined to be compatible with or are performed for meeting recreation objectives for the area. Generally, such activities (e.g., those associated with mineral development, roads, pipelines, powerlines, etc.) will be designed to avoid these areas. These areas would be open to development of recreation site facilities. An approved plan will be required prior to the site disturbance. REC-15–The natural values of Boars Tusk will be protected. Surface occupancy and surface disturbing activities are prohibited in this area, unless such activity would enhance management of these geologic features. A recreation project plan and an interpretive prospectus will be developed for the Boars Tusk. REC-16–Two backcountry byways are designated (in the JMH area) and will include consideration for mountain bike use. They are Tri-Territory Loop and Red Desert. Brochures and interpretive signs will be prepared to inform users. Additional travel routes that meet the designation criteria will be considered for designation as backcountry byways on a case-by-case basis. REC-17–Mountain bike trail opportunities will be explored. REC-18–The Sweetwater River will be managed for recreation values. Recreation area management plans will be developed where necessary. REC-19–Posting information and directional signs will be necessary in some areas. The Green River RMP establishes various types of resource designations, and sign posting will be provided to promote visitor use of the various areas consistent with management objectives.

Resource	Objectives and Actions
SPECIAL STATUS PLANT SPECIES MANAGEMENT (also refer to Special Designation Management Areas section)	SSP-1–MANAGEMENT OBJECTIVES: (1) To maintain or enhance essential and important habitat and prevent destruction or loss of the species' communities and important habitat, (2) To provide opportunities for enhancing or expanding the habitat, and (3) To prevent the need for listing these species as threatened or endangered. SSP-2–MANAGEMENT ACTIONS: Any management actions on potential habitat of special status plant species communities on federal land or on split-estate lands (i.e., nonfederal land surface ownership with BLM-administered federal minerals ownership) will require searches for the plant species prior to project or activity implementation to determine the locations of special status plant species and essential and/or important habitats. Special status plant populations are closed to activities that could adversely affect these species and their habitat. Management requirements in habitat areas may include prohibiting or limiting motorized vehicle use, surface uses, and explosive charges or any other surface disturbing or disruptive activity that may cause adverse effects to the plants. SSP-3–Known locations of special status plant species communities will be protected and closed to the following activities: 1. Surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat 2. Location of new mining claims (withdrawal from mineral location and entry under the land laws will be pursued) 3. Mineral material sales 4. All OHV use, including those vehicles used for geophysical exploration activities and surveying 5. The use of explosives and blasting. SSP-4–Locations of special status plant species are open to consideration for mineral leasing with a No Surface Occupancy requirement. SSP-5–On essential and important special status plant species habitat, all fire suppression activities are limited to existing roads and trails. A site-specific analysis will be prepared for all fire management activities (e.g., prescribed fires, fire suppression) around special status plant species sites to determine the appropriate fire management response. SSP-6–Should new special status plant species be identified, they will be managed under the same prescriptions described above for the known species. This may result as new information about vegetation types and communities is acquired. SSP-7–Known locations of special status species will be evaluated on a case-by-case basis to determine whether they meet the relevance and importance criteria to be considered for ACEC designation. If appropriate, such locations will be proposed for ACEC designation (see the Special Designation Management Areas section). SSP-8–Management prescriptions for threatened and endangered species and proposed threatened and endangered species will be developed on a case-by-case basis in consultation with the U.S. Fish and Wildlife Service.

Resource	Objectives and Actions
VEGETATION MANAGEMENT	VEG-1–MANAGEMENT OBJECTIVES: (1) To maintain or enhance vegetation community health, composition, and diversity to meet watershed, wild horse, wildlife, and livestock grazing resource management objectives; and (2) To provide for plant diversity (desired plant communities). VEG-2–MANAGEMENT ACTIONS: Riparian habitat will be maintained, improved, or restored to provide wildlife and fish habitat, improve water quality, and enhance forage conditions. Where possible, acquisition of additional riparian area acreage will be pursued to enhance riparian area management. VEG-3–The minimum management goal for riparian areas is to achieve proper functioning condition. This is considered the first priority for vegetation management. Desired plant communities must meet the criteria for proper functioning condition. VEG-4–Desired plant community objectives for upland and riparian areas will be established for the planning area through individual site-specific activity and implementation planning and as updated ecological site inventory data become available. All activity and implementation plans will incorporate desired plant community objectives. Native plant communities are the preferred species identified when establishing desired plant community objectives. VEG-5–Mechanical, biological, chemical, and prescribed fire would be the methods utilized to treat vegetation. VEG-6–Prescribed fire generally will be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. Low-intensity burns during periods of high soil moisture will be the preferred time and method in mountain shrub communities. VEG-7–Prescribed fire will be restricted in areas with surface coal or other fossil fuel outcrops. VEG-8–Prescribed burns generally will be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation. VEG-9–All treated areas will be rested a minimum of two growing seasons from livestock grazing. Burn areas will be fenced from livestock and big game animals if necessary. VEG-10–Vegetation manipulation projects will be conducted to reach multiple use objectives and will involve site-specific environmental analysis and coordination. VEG-11–All vegetation manipulation projects will involve site-specific environmental analysis; coordination with affected livestock operators and the WGFD; and will include multiple use objectives for resource uses including livestock grazing, wildlife, recreation, and watershed. VEG-12–Vegetation treatments will be designed to be compatible with special status plant species. For example, spraying, burning, and mechanical disturbances will not be allowed to adversely affect these plant species.

Resource	Objectives and Actions
	VEG-13–Vegetation treatment projects will be designed to protect water quality and dissipate erosion. This generally means accomplishing vegetation treatments in a mosaic pattern and leaving sufficient untreated vegetation to buffer riparian areas and intermittent and ephemeral drainages from erosion. Specific treatment designs for erosion control will be determined on a case-by-case basis.
	VEG-14–All vegetation treatments will be designed on a case-by-case basis and will be irregular in shape for edge effect, cover, and visual aesthetics.
	VEG-15–Treatments in riparian and adjacent upland areas would be designed site-specifically to ensure that excessive sedimentation along streams would not occur.
	VEG-16–Vegetation buffer strips would be provided along streams to control sedimentation. Generally vegetation buffer strips 100 feet wide would be left intact adjacent to perennial streams.
	VEG-17–No more than 50 percent of the vegetation cover would be removed from the inner gorge of intermittent and ephemeral drainages to protect watershed values.
	VEG-18–Herbicide loading sites would not be located closer than 500 feet to live water, floodplains, riparian areas, and all special status plant locations.
	VEG-19–Riparian Vegetation Management Actions: Riparian habitat in proper functioning condition is the minimum acceptable status or level within the Green River Resource Area. Under this RMP, 75 percent of the riparian areas should, within 10 years, have activity and implementation plans in various states of implementation that will allow riparian areas to achieve or maintain proper functioning condition.
	VEG-20–Site-specific activity and implementation plans will be used to identify methods to achieve or maintain proper functioning condition in riparian areas.
	VEG-21–Methods applied where grazing occurs include, but are not limited to, fencing, establishment of pastures and exclosures, off-site water development, off-site salt or mineral supplement placement, timing and seasons of use, establishment of allowable use levels for key riparian species, herding, and grazing systems. Methods applied where surface disturbing activities occur include, but are not limited to, distance restrictions, timing constraints, sediment containment and control design, and reclamation practices.
	VEG-22–The next step beyond basic proper functioning condition of riparian areas is the achievement of desired plant communities. Desired plant community objectives will be developed for riparian areas based on any of several different methods, including ecological site inventory, comparison areas (comparison areas would have similar soils, aspect, vegetation, and precipitation), and an estimate of the structural component that can be achieved in the short term.

Resource	Objectives and Actions
	VEG-23–Although the desired plant community establishes objectives for the riparian area or upland plant community, the Desired Future Condition establishes goals for entire watersheds (or larger blocks of land) involving all activities and resources. Achieving proper functioning condition and a desired plant community are integral steps in the process of establishing and achieving the desired future condition of an area.
VISUAL RESOURCE MANAGEMENT	VRM-1–MANAGEMENT OBJECTIVES: (1) To maintain or improve scenic values and visual quality; and (2) To establish priorities for managing the visual resources in conjunction with other resource values.
	VRM-2–MANAGEMENT ACTIONS: Visual resource classes will be retained or modified to enhance other resource objectives, such as those for cultural resource and recreation management, wild horse viewing, and special management areas.
	VRM-3–Projects and facilities will be designed to meet the objectives of the established visual classifications, and appropriate mitigation will be included. Facilities (either in place or new), including linear rights-of-way, must be screened, painted, or designed to blend with the surrounding landscape.
	VRM-4–All surface disturbing actions, regardless of the visual resource management class, are required to be mitigated to reduce visual impacts. This will be achieved by designing and locating the disturbances in a manner that most closely meets the minimum degree of contrast acceptable for the visual resource management class.
	VRM-5–Management actions on public lands with a Class II visual resource management classification must be designed to blend into and retain the existing character of the natural landscape.
	VRM-6–Management actions on public lands with a Class III visual resource management classification must be designed to partially retain the existing character of the landscape.
	VRM-7–Management actions on public lands with a Class IV visual resource management classification could result in major modification of the character of the landscape.
	VRM-8–Management actions in areas classified as rehabilitation areas will be designed to reclaim and improve visual resource values to achieve a higher classification.
	VRM-9–The scenic values along Highway 28 within Fremont County will be protected. All proposed lands actions and other activities within view of the highway will be evaluated for impacts and will require mitigation to protect the scenic and historic values of this area. Class II visual resource management classifications on public lands will be retained.
	VRM-10–The public lands along all other major highways in the planning area will be managed under their respective visual resource management classifications.

Resource	Objectives and Actions
	VRM-11–Suitable wild horse herd viewing areas may be developed to enhance public viewing of horses. Viewing areas and a half-mile distance surrounding them will be closed to long-term or permanent intrusions and surface disturbing activities that could interfere with opportunities to view horses (e.g., structures, mineral activities, powerlines, roads, etc.). Short-term intrusions that will blend with the landscape or will benefit the intent of the wild horse herd viewing areas will be considered on a case-by-case basis.
WATERSHED/SOILS MANAGEMENT	WATER-1–MANAGEMENT OBJECTIVES: (1) To stabilize and conserve soils; (2) To increase vegetative production; (3) To maintain or improve surface and ground water quality; and (4) To protect, maintain, or improve wetlands, floodplains, and riparian areas. WATER-2–MANAGEMENT ACTIONS: Land uses and surface disturbing activities will be designed to reduce erosion and to maintain or improve water quality. Management in damaged wetland and riparian areas will be directed toward restoration to predisturbance conditions. Practices to carry out these actions may include ensuring that construction of stream crossings occurs during normal stream flows, not during high or peak flows when additional sediment from construction could be swept in the stream; and ensuring water discharges meet appropriate standards. Streambank erosion and channel incision are of particular concern, as either would result in unacceptable losses of riparian habitat. Accelerated surface erosion will impact riparian habitat adversely and reduce productivity in uplands. WATER-3–Management in the planning area will emphasize the following: 1. Reduction of sediment, phosphate, and salinity load in drainages where possible. Measures listed in Appendix 5-1 of the Green River RMP will be applied as necessary. Guidelines described in the Wyoming Water Quality Rules and Regulations will also be applied as necessary (Wyoming 1989). WATER-4– 2. Maintaining and improving drainage channel stability WATER-5– 3. Restoring damaged wetland areas. Exclosures will be designed to allow ample water for livestock and allow minimum impediments to big game migration. WATER-6–Areas where the soils are highly erodible or difficult to reclaim will receive increased attention and are avoidance areas for surface disturbing activities. Surface disturbing activities could be allowed in these areas if site-specific analysis determines that soil degradation will not occur and that water quality will not be adversely affected. When applicable, an erosion control plan will be prepared as part of the site-specific analysis process for activity and implementation planning. Rehabilitation plans will be developed and implemented for disturbed areas as needed. WATER-7–Activity and implementation plans will be designed with measures to reduce phosphate loading to Fontenelle and Flaming Gorge Reservoirs and the Green River.

Resource	Objectives and Actions
	WATER-8–BLM will participate with federal and local government agencies to develop and implement salinity control plans.
	WATER-9–BLM will participate with federal and local government agencies to develop and implement phosphate reduction plans in tributaries to Fontenelle Reservoir and Flaming Gorge Reservoir.
	WATER-10–Site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, and enhance water quality) will be prepared for areas where needed. These areas include but are not limited to Cedar Mountain and Sage Creek/Currant Creek. The Red Creek watershed plan will continue to be implemented as appropriate.
	WATER-11–Activity and implementation plans for other land and resource uses and areas will include general watershed management directives and will incorporate sediment reduction and water quality improvement objectives.
	WATER-12–Wetlands and floodplains within the planning area will be managed in accordance with Executive Orders 11988 and 11990.
	WATER-13–Surface disturbing and construction activities (e.g., mineral exploration and development activities, pipelines, powerlines, roads, recreation sites, fences, wells, etc.) that could adversely affect water quality and wetland and riparian habitat, will avoid the area within 500 feet of or on 100-year floodplains, wetlands, or perennial streams and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages. Proposals for linear crossings in these areas will be considered on a case-by-case basis. Activities could be allowed if a site-specific analysis determines that no adverse impacts will occur to floodplains, wetlands, perennial streams, or water quality, and a plan to mitigate impacts to water quality is approved.
	WATER-14–The 100-year floodplains, wetlands, and riparian areas are closed to any new permanent facilities (e.g., storage tanks, structure pits, etc.). Proposals for linear crossings in these areas will be considered on a case-by-case basis.
	WATER-15–Practices, determined on a case-by-case basis, will be implemented as needed to protect ground water and prevent soil contamination. Such practices could include lining of reserve, production, and other types of pits and will include alternate locations for plants, mill sites, ponds, and sewage lagoons where soils are highly permeable. Areas within 500 feet of or on 100-year floodplains, wetlands, or perennial streams, and within 100 feet of the inner gorge of intermittent and large ephemeral drainages, would be avoidance areas for surface disturbing activities. Linear crossings would be considered on a case-by-case basis.
	WATER-16–Aquifer recharge areas will be managed to protect ground water quality and to ensure continued ability for recharging aquifers. Protection will be provided by limiting road density and surface occupancy to maintain a healthy recharge area. Vegetative cover and geologic soil conditions that are conducive to ground water recharge will be maintained.

Resource	Objectives and Actions
	WATER-17–BLM will cooperate with the State of Wyoming on the Wyoming State 208 Water Quality Plan, and will coordinate the development of water quality plans consistent with BLM programs and RMP recommendations and decisions. Water quality will be monitored as needed to determine pollution and land health conditions. An area-wide monitoring plan to determine sources of water pollution will continue.
WILD HORSE MANAGEMENT	WH-1–MANAGEMENT OBJECTIVES: (1) To protect, maintain, and control viable, healthy herds of wild horses while retaining their free-roaming nature, (2) To provide adequate habitat for free-roaming wild horses through management consistent with principles of multiple use and environmental protection, and (3) To provide opportunity for the public to view wild horses. WH-2–MANAGEMENT ACTIONS: That portion of the Great Divide Wild Horse Herd Management Area within the JMH CAP area would be maintained. Planning area appropriate management levels (AML) for wild horses is 415–600 head. WH-3–A site-specific activity plan for the Great Divide Wild Horse Herd Management Area will be implemented and maintained to conform with RMP objectives for vegetation management. A monitoring program will be developed to provide information to support wild horse management decisions. WH-4–Specific habitat objectives for the herd management area will be developed. Consideration will be given to desired plant communities, wildlife, watershed, livestock grazing, and other resource needs. WH-5–Water developments will be provided if necessary to improve herd distribution and manage forage utilization. The feasibility of water development on the checkerboard land portion of the herd areas to better distribute wild horses will be determined. Any water developments proposed in the Rock Springs Allotment primarily should enhance management of wild horses. Water developments on crucial winter ranges could be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial winter range. WH-6–Wild horse herd management will be directed to ensure that adequate forage will be available to support appropriate management levels in the herd units and that herds maintain appropriate age, sex, and color ratios. WH-7–Selective gathering programs will be implemented in each of the wild horse herd management areas. Gathering plans will be prepared for removal of excess horses from inside and outside the wild horse herd management areas. Gathering cycles will vary by plan objectives, resource conditions, and needs. Fertility control will be initiated only if necessary. These actions will aid in stabilizing populations, managing for conditions and special characteristics, and will supply an adoptable population (i.e., young horses). WH-8–Fencing in wild horse herd management areas will be restricted to those situations where multiple use values will be enhanced. All fences will be constructed to minimize restriction of wild horse movement.

Resource	Objectives and Actions
	WH-9–Opportunity for public education and enjoyment of wild horse herds will be provided by placing interpretive signs, providing interpretive sites, and providing access to the herd areas. Signs providing information on wild horses will be placed in strategic locations, such as the rest area east of Rock Springs along Interstate 80, on the Bar X Road at the junction with I-80, and at the entrance to the Oregon Buttes and Continental Peak areas on Highway 28. (See the Recreation and Visual Resource Management sections for direction on wild horse herd viewing areas.)
	WH-10–Other resource uses will be maintained and protected consistent with those resource management objectives, while maintaining viable, healthy wild horse herds and appropriate herd management levels. Wild horse herd management areas will be managed in a natural, healthy state and for an ecological balance among wild horses and land and resource uses.
WILDERNESS MANAGEMENT	WILD-1–MANAGEMENT OBJECTIVE: To retain the wilderness quality and manage the WSAs in the RMP planning area in accordance with the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" until Congress acts on designation.
	WILD-2–MANAGEMENT ACTIONS: Wilderness management plans will be prepared for those WSAs designated by Congress as wilderness.
	WILD-3–Discretionary uses within or adjacent to WSAs will be reviewed to ensure they do not create conflicts with management and preservation of wilderness values.
	WILD-4–Should Congress designate the WSAs in the planning area (partially or wholly) as wilderness, the management of the designated areas will be for wilderness values, either as described in the appropriate wilderness environmental impact statement (EIS) or as directed by Congress.
	WILD-5–Should Congress not designate areas (partially or wholly) as wilderness, management of the nondesignated areas will be in accordance with the approved Green River RMP or as otherwise directed by Congress. The undesignated areas will lose their identity as WSAs and will be managed consistent with the adjoining areas as prescribed in the Green River RMP or as otherwise directed by Congress.
	WILD-6–If necessary, in the course of incorporating the wilderness decisions into the RMP, the RMP will be amended.
WILDLIFE MANAGEMENT	WLIFE-1–MANAGEMENT OBJECTIVES: (1) To maintain, improve, or enhance the biological diversity of plant and wildlife species while ensuring healthy ecosystems, and (2) To restore disturbed or altered habitat, with the objective of attaining desired native plant communities, while providing for wildlife needs and soil stability.
	WLIFE-2–The objectives for management of wetlands/riparian areas are (1) tTo achieve a healthy and productive condition for long-term benefits and values in concert with range, watershed, and wildlife needs; and (2) To enhance or maintain riparian habitats by managing for deep-rooted native herbaceous or woody vegetation.

Resource	Objectives and Actions
	WLIFE-3–The objective for management of threatened, endangered, special status, and sensitive plant and animal species is to provide, maintain, or improve habitat through vegetative manipulation, mitigation measures, or other management actions, including habitat acquisition and easements.
	WLIFE-4–MANAGEMENT ACTIONS: To the extent possible, suitable wildlife habitat and forage will be provided to support the WGFD 1989 Strategic Plan objectives. Changes within WGFD planning objective levels will be considered based on habitat capability and availability and site-specific analysis.
	WLIFE-5–BLM will cooperate with WGFD in the preparation of studies for the introduction and reintroduction of native and nonnative wildlife and fish species.
	WLIFE-6–High-value wildlife habitats will be maintained or improved by reducing habitat loss or alteration and by applying appropriate distance and seasonal restrictions and rehabilitation standards to all appropriate activities. These habitats include crucial winter habitat, parturition areas, and sensitive fisheries habitat.
	WLIFE-7–Big game crucial winter ranges and parturition areas will be protected to ensure continued usability by limiting activities during critical seasons of use and by limiting the amount of habitat disturbed.
	WLIFE-8–Grouse breeding and nesting areas will be protected as follows:
	WLIFE-9–Aboveground facilities (power lines, storage tanks, fences, etc.) are prohibited on or within one-quarter-mile of grouse breeding grounds (leks). Placement of facilities, "on" (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction and seismic activity, could be granted exceptions within one-quarter-mile of leks, in certain circumstances.
	WLIFE-10–To protect breeding grouse, disruptive activities will avoid occupied grouse leks from 6:00 p.m. to 9:00 a.m. daily. The actual area to be avoided and the appropriate time frame (usually from March 1 through June 15) will be determined on a case-by-case basis. The size of the avoidance area (usually within one-quarter-mile to one-half-mile of the lek) may vary depending on natural topographic barriers, terrain, line of sight distance, and other factors.
	WLIFE-11–To protect grouse nesting habitat, seasonal restrictions will apply within appropriate distances from the grouse lek. Appropriate distances (up to 2 miles) and time frames (usually from March 1 through June 30) will be determined on a case-by-case basis. Exceptions to seasonal restrictions may be granted provided the criteria in Appendix 4 can be met.
	WLIFE-12–Active and historic raptor nesting sites will be protected and managed for continued nesting activities. An active raptor nest is one that has been occupied within the past 3 years; an historic nesting site is an area of high topographic relief, particularly cliff areas, known to have supported concentrations of nesting raptors (such as Cedar Canyon, Four-J Basin, and Kinney Rim). The appropriate level of protection will be determined on a case-by-case basis depending on such factors as the species involved, natural topographic barriers, and line-of-sight distances. Different species of raptors may require different types of protective measures.

Resource	Objectives and Actions
	WLIFE-13–Project components, such as permanent and high profile structures (i.e., buildings, storage tanks, powerlines, roads, well pads, etc.), are prohibited within an appropriate distance of active raptor nests. The appropriate distance (usually less than one-half-mile) will be determined on a case-by-case basis and may vary depending on such factors as the species involved, natural topographic barriers, and line-of-sight distances. Placement of facilities "on" (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction and seismic activity, could be granted exceptions within one-half-mile of active raptor nests, in certain circumstances. WLIFE-14–Nesting raptors will be protected through restricting disruptive activities seasonally within a one-half-mile to 1-mile radius of occupied raptor nesting sites. WLIFE-15–Raptor nest surveys will be conducted within a 1-mile radius or linear distance of proposed surface uses or activities, if such activities are proposed to be conducted during raptor nesting seasons (usually between February 1 and July 31). WLIFE-16–Fences on public lands will be removed, modified, or reconstructed if documented wildlife or wild horse conflicts occur. Introduction of herder control will be encouraged as an alternative to fencing. All constructed fences will follow construction standards and design (BLM Manual 1740) and will be located and designed to not impede wildlife and wild horse movement. WLIFE-17–Livestock and wild horse water developments in crucial habitat could be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial habitat. WLIFE-18–The cooperative management agreement with the WGFD for annual monitoring, maintenance, and development of additional waters, will continue as needed. Livestock water developments will be modified or protected where possible to enhance wildlife habitat and to maintain or enhance water quality. WLIFE-19–Aquatic, wetland, and riparian habitat are not suitable for disposal unless opportunities exist for land exchange for lands of equal or better value. BLM will consider acquiring additional lands along perennial waters and wetlands. Water rights for BLM water developments will be pursued as appropriate. Water developments for livestock and wild horse use on crucial habitat could be considered when consistent with wildlife habitat needs. WLIFE-20–Needed special management and riparian management exclosures will be developed and/or maintained, and exclosure plans will be implemented for enhancement of wildlife habitat. Exclosures are closed to livestock grazing use and no animal unit months (AUM) in these areas will be available for livestock use. WLIFE-21–Management toward proper functioning condition or desired future condition of riparian areas will be implemented. Executive Order 11990 for the protection of wetlands will apply. WLIFE-22–Seasonal restrictions for surface disturbing activities to protect game fish and special status fish populations during spawning will be applied as necessary.

Resource	Objectives and Actions
	WLIFE-23–Habitat management plans will be developed where needed, particularly for highly developed and disturbed areas, to mitigate wildlife habitat losses. Plans could include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives. Such actions as preparing transportation plans and reclaiming roads, seeding, and vegetation enhancement (vegetation treatments, fencing), water developments, and reclamation actions to reduce the amount of disturbance, will be considered. Areas identified for consideration of such plans include but are not limited to the Nitchie Gulch and Cedar Canyon areas. WLIFE-24–BLM will continue to coordinate with U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS)-Wildlife Services (WS) and annually review their annual wildlife damage management plan for animal damage control activities on public lands. Areas where proposed animal damage control activities (all or specific methods) are not compatible with BLM planning and management prescriptions or objectives for other resource activities and users, will be identified on a case-by-case basis, and APHIS-WS will be requested to amend or adjust proposed animal damage control activities accordingly.
WOODLAND RESOURCE MANAGEMENT	WOOD-1–MANAGEMENT OBJECTIVES: (1) To provide for healthy forest resources, primarily to meet multiple resource objectives (i.e., improved watershed, soils, recreation, and wildlife habitat values); (2) To maintain and enhance biological diversity; (3) To provide a long-range view of desired plant community concepts at the landscape level; and (4) To identify old-growth areas. WOOD-2–Noncommercial forest lands (woodlands) will be managed to optimize cover and enhance habitat for wildlife, to protect soil and watershed values, and to complement recreation uses. WOOD-3– MANAGEMENT ACTIONS: Woodland forest areas will be managed using silvicultural practices that promote stand viability. Treatments could include thinning, harvesting, chaining, and burning. The vegetative material resulting from these treatments will normally be sold through public demand sales. WOOD-4–Woodland forest acreage will be maintained. Treatments may be implemented that influence successional stages, but such treatments will not permanently convert the areas to another vegetation type. Old aspen stands may be replaced by stands of sprouting aspen by various treatment methods (e.g., burning). Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (e.g., Animal Inn). Juniper stands may be replaced where they are encroaching into other vegetation types. WOOD-5–Silvicultural treatments in mature timber stands will be designed to improve wildlife habitat and watershed condition (i.e., create small openings to provide forage for wildlife and accumulate snow drifts to increase moisture). WOOD-6–Cottonwood trees are not available for any harvesting. WOOD-7–Habitat fragmentation will be prevented if it has a negative ecological effect.

Resource	Objectives and Actions
	WOOD-8–Special management areas (old-growth, scientific research areas) will be identified, and appropriate management incorporated into activity plans. WOOD-9–Firewood cutting for camping purposes will be limited to designated areas. (This mainly applies to the area around developed recreation sites.)
SPECIAL DESIGNATION MANAGEMENT AREAS ON BLM-ADMINISTERED PUBLIC LANDS	
Greater Sand Dunes ACEC General Area	SAND-1–MANAGEMENT OBJECTIVE: To preserve and protect the integrity of the unique values in the area for future public use and enjoyment. These values include the unusual geological features associated with the sand dunes and the Boars Tusk; the biological interrelationships supported by the dunes, especially the Steamboat desert elk herd, mule deer herd, and other dependent plants and animals; and a variety of recreation uses. SAND-2–MANAGEMENT ACTIONS: The ACEC designation for the BLM-administered public lands in the Greater Sand Dunes ACEC area is retained (38,650 acres). SAND-3–Any surface disturbing activities within the Wasatch and Green River Formations require paleontological clearance. SAND-4–Surface disturbing activities would be managed to avoid recreation sites. SAND-5–BLM-administered public lands in the ACEC will be managed consistent with the Class II visual resource management classification. Management actions on BLM-administered public lands classified as Class II visual resource management lands will be designed to retain the existing character of the landscape. The visual impacts of facilities (e.g., producing wells) or other visual intrusions in the area will be evaluated and mitigated to the extent reasonable. Materials used for improvements must be compatible with the natural character of the area to reduce intrusive visual effects on the natural environment. SAND-6–BLM-administered public lands in the Greater Sand Dunes area and within 1 mile or the visual horizon (whichever is closer) of the area, are avoidance areas for new rights-of-way. SAND-7–BLM-administered public lands in the area are closed to mineral material sales. SAND-8–Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for the area. Grazing systems will be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian). SAND-9–Maintenance and use of existing necessary rangeland improvements is allowed.

Resource	Objectives and Actions
	SAND-10–Wild horse use in the area will be consistent with the Great Divide Basin Wild Horse Herd Management Plan and the management objectives for the area. No wild horse traps will be constructed within the area.
	SAND-11–To support and improve the diversity of wildlife species within the area, wildlife habitat on BLM-administered public lands will be protected, maintained, or enhanced. Crucial elk winter range in the area will be maintained as an essential component of the Steamboat Mountain-Sands elk habitat.
	SAND-12–Projects to improve the interdunal ponds for bird, amphibian, and mammal habitat will be considered and evaluated for development on BLM-administered public lands.
	SAND-13–Interpretive materials and educational programs may be developed to describe wildlife, cultural, and other values in the area.
	SAND-14–Native vegetation will be maintained and protected to allow natural plant succession to continue.
	SAND-15–A diversity of nonmotorized recreation uses, including hiking, bird watching, photography, sightseeing, and hunting, will be encouraged. Appropriate recreation facilities will be developed and maintained on BLM-administered public lands to provide for a diversity of motorized and nonmotorized recreation uses.
	SAND-16–Two roads that pass through or adjacent to the area will be designated as part of the Tri-Territory backcountry byway.
	SAND-17–Camping is restricted to the BLM 14-day limit, and subject to "pack in-pack out" requirements for trash and items.
Greater Sand Dunes ACEC Western Portion	SAND-18–The western portion of the Greater Sand Dunes area is bounded on the east by the Sand Dunes WSA boundary and on the west by the Greater Sand Dunes ACEC boundary.
	SAND-19–The portion of the area that overlaps the WSAs is closed to OHVs, including over-the-snow vehicles and some mechanized vehicles, to maintain the unique naturalness, solitude, and primitive and unconfined recreational opportunities.
	SAND-20–This overlap portion will also be closed to mineral location, entry under the land laws, and geophysical activities. The oil shale withdrawal will remain in effect until a comprehensive study is completed for the area. If necessary, lands could be identified to be withdrawn for protection of their resource values.
	SAND-21–The approximately 4,360 acres of federal coal lands in the area are closed to further consideration for coal leasing and development.
	SAND-22–Management of this area is guided by the "Interim Management Guidelines for Lands Under Wilderness Review" (which includes Buffalo Hump and Sand Dunes WSAs).

Resource	Objectives and Actions
	SAND-23–Exchanges for acquisition will be pursued to enhance the management of resources in the area (approximately 1,920 acres).
Greater Sand Dunes ACEC Eastern Portion	SAND-24–The eastern portion of the Greater Sand Dunes area is bounded on the west by the Sand Dunes WSA and on the east by the ACEC boundary.
	SAND-25–Activities in the area will be required to conform to visual resource management classifications and prescriptions.
	SAND-26–Geophysical activity, including OHV travel, is allowed, provided resource damage is minimized and the activities conform to OHV designations and transportation plans for the area.
	SAND-27–The relatively pristine portion of the eastern area that has no developments (approximately 8,800 acres), including the base of Steamboat Rim, will be managed to protect big game habitat, vegetation communities, and visual and recreation resources.
	SAND-28–Road construction and new access may not be feasible for much of the entire eastern portion. To prevent conflicts with big game, recreation users, and other resource and land use activities, alternative access methods may be needed (such as use of existing or designated roads or pads, seasonal travel requirements or restrictions, use of helicopters).
	SAND-29–Activities will not be permitted to disrupt access to or use of developed and semideveloped recreation sites. Activities that are incompatible with recreation sites will be managed to avoid these sites.
	SAND-30–Approximately 9,840 acres of Federal coal lands in the area are closed to coal leasing and development by surface mining methods and related surface facilities and activities. This area is open to consideration for coal leasing by subsurface mining methods, with placement of surface facilities extremely limited.
	SAND-31–Surface disturbing activities, geophysical activities, and oil and gas exploration and development activities are restricted seasonally on crucial big game winter ranges and big game birthing areas. Exceptions to this restriction may be approved for activities such as oil and gas development, rights-of-way, construction, and range improvement development, if conditions described in Appendix 4 apply. Once an operation starts (such as oil and gas drilling/completion), it would be allowed to be completed into or through the winter. Decision points for shutdown due to unacceptable winter conditions occur between exploration or development stages, such as pad construction and drilling startup, and between drilling/completion and production facility installation.
	SAND-32–Surface water, soils, and shallow aquifers will be protected from contamination by practices such as closed drilling systems or installation of pit liners. Pit liners will be removed prior to reserve pit reclamation. Dune ponds will not be used as water sources for development activities.

Resource	Objectives and Actions
	SAND-33–This portion of the ACEC is an avoidance area for rights-of-way. Some facilities could be allowed if analysis indicates that the management objectives for the area could be met. New linear facilities, such as pipelines and powerlines, in areas of ongoing development may be laid on the surface or buried adjacent to access roads or within existing concentration areas containing such lines. Pipelines in the stabilized dune areas will be installed as surface lines to avoid unnecessary disturbance of vegetation. Surface gas pipelines will be monitored by the operators to identify potential hazards to OHV users. Identified hazards will be marked to improve visibility. A recreation user map will be developed in cooperation with oil and gas operators to show the location of aboveground facilities (e.g., pipelines, well production facilities, snow fences, etc.). SAND-34–Any proposed activity or use that involves surface disturbance will require appropriate engineering design, geotechnical analysis, mitigation planning, and other appropriate action. SAND-35–Abandoned pipelines and other unnecessary facilities (e.g., snow fence) in unstabilized dune areas will be removed. SAND-36–About 10,500 acres of unstabilized dunes are designated open to OHV travel on the active sand dunes. SAND-37–About 5,810 acres of stabilized dunes are designated as limited to existing roads and trails for OHV travel.
Greater Sand Dunes ACEC Crookston Ranch and Boars Tusk Portion	SAND-38–The Crookston Ranch site will be managed to preserve its historic features and for the interpretation of ranching history in the area. About 500 acres of BLM-administered public lands surrounding the site (the area within a half-mile radius) will be managed to preserve the setting of the historic ranch. SAND-39–Crookston Ranch is closed to the following activities: 1. Surface disturbing activities 2. Mineral material sales 3. Use of explosives and blasting. SAND-40–The Crookston Ranch and surrounding 500-acre area are closed to surface mining activities, such as coal mining, and to the placement of related surface facilities. SAND-41–The Crookston Ranch area is open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the sites. Facilities are prohibited from being developed on site. Either a protective right-of-way or withdrawal for the Crookston Ranch will be pursued to accomplish this. SAND-42–Fires in the Crookston Ranch area will be immediately suppressed if there is any potential of the structures being burned. SAND-43–OHV use is limited to designated roads and trails in this area. SAND-44–The Boars Tusk will be managed to preserve its value as a geologic feature.

Resource	Objectives and Actions
	SAND-45–The Boars Tusk area (about 90 acres) is closed to the following activities: 1. Surface disturbing activities 2. Mineral material sales 3. Use of explosives and blasting. SAND-46–The area within a half-mile radius of Boars Tusk, including Boars Tusk (about 500 acres total), is closed to blasting and explosive charges. SAND-47–OHV travel is limited to designated roads and trails. The road around Boars Tusk is closed. SAND-48–The Boars Tusk area is open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site. Facilities are prohibited from being developed on the actual geologic feature. SAND-49–The Boars Tusk and about 1,400 acres of BLM-administered public lands in the surrounding area will be managed to retain natural and geologic values. The area is closed to any surface mining activity, such as coal mining, and any related surface facilities. The area is open to consideration of coal leasing by subsurface mining methods only. Any activities or ancillary facilities related to subsurface mining are prohibited.
Deferred Decisions in the Eastern Portion of the Greater Sand Dunes Area	SAND-50–The issuance of federal minerals leases on BLM-administered public lands in the eastern portion of the Sand Dunes area (about 16,390 acres) is contingent on completing a CAP encompassing the combined Steamboat Mountain and Greater Sand Dunes areas. This detailed implementation plan will identify areas of feasible access, allowable road densities, and amount and acceptable types of development in the area (e.g., field unitization may be a requirement for oil and gas development activities in the area). Drilling of additional oil and gas wells or production from temporarily shut-in wells could be allowed upon completion of the activity or implementation plan. SAND-51–Deferred actions and mitigation requirements will apply to all surface disturbing activities, not just those related to oil and gas exploration and development. Surface disturbing and disruptive activities, such as road or utility development, construction, and drilling, will be deferred until the CAP is completed. The CAP will cover such things as transportation; drilling pad density, drilling, and operations after well completion; development and location of range improvements; and recreational activities.
Oregon Buttes ACEC	ORE-1–MANAGEMENT OBJECTIVES: (1) To protect and enhance the scenic integrity as an historic landmark, and (2) To protect the significant wildlife values that are found in the area. ORE-2–MANAGEMENT ACTIONS: The existing ACEC (3,450 acres) designation is retained. ORE-3–The ACEC is closed to the following activities: 1. Surface disturbing activities that could adversely affect the resource values in the area 2. Mineral material sales for sand, gravel, or other types of construction or building materials 3. Motorized vehicle travel, including that utilized for seismograph operations.

Resource	Objectives and Actions
	ORE-4–The ACEC is open to consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection of the area. Restrictions for raptors and big game parturition areas apply. ORE-5–Livestock grazing objectives and management practices will be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems will be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian). ORE-6–Wild horse management in the area would be consistent with the Divide Basin Wild Horse Herd Management Plan and the management objectives for the area (2,560 acres). No wild horse traps will be constructed within the area. ORE-7–The Oregon Buttes ACEC will be managed consistent with the Class II visual resource management classification. Management actions will be designed to blend into the natural landscape and retain the existing character of the landscape.
South Pass Historic Landscape ACEC	SOUTH-1–MANAGEMENT OBJECTIVE: To protect the visual and historical integrity of the historic trails and surrounding viewscape. SOUTH-2–MANAGEMENT ACTIONS: The 53,780 acres of BLM-administered public lands in the South Pass Historic Landscape area are designated the South Pass Historic Landscape ACEC. The ACEC will be evaluated to determine if it meets the criteria for nomination to the National Register of Historic Places. SOUTH-3–The South Pass Historic Landscape encompasses the viewshed along the Oregon, Mormon Pioneer, California, and Pony Express trails and the Lander Cutoff (about 16.42 miles of trail with a 6-mile wide corridor along the Oregon, Mormon Pioneer, and California trails and a 2-mile wide corridor along the Lander Cutoff). SOUTH-4–The landscape is open to consideration of mineral leasing and mineral material sales, provided that effects to the visual and cultural resource values could be mitigated. SOUTH-5–Most of the ACEC is also open to exploration and development of locatable minerals. A plan of operations is required to address measures to mitigate effects to the viewshed before any mining claim activity is allowed. A withdrawal of about 5,260 acres from mineral location and entry under public land laws will be pursued if necessary. SOUTH-6–A right-of-way grant has been authorized but not yet issued for the Altamont Pipeline Company to build a pipeline across public lands through the South Pass Historic Landscape Area. SOUTH-7–Should the Altamont Pipeline grant be issued, it will be a one-time right-of-way authorization through the South Pass Historic Landscape Area. Future rights-of-way across public lands through this area (for linear utilities, transmission lines, communication sites, roads and highways, etc.) that could adversely affect the values of the historic landscape are prohibited. In addition, should the Altamont Pipeline not be built, the South Pass Historic Landscape Area will be closed to any subsequent right-of-way proposal, to either replace or substitute for the Altamont Pipeline, or any similar future proposed action across public lands in the area.

Resource	Objectives and Actions
	SOUTH-8–About 23,640 acres (within the JMH project area) surrounding the trails and visible from the trails are closed to surface disturbing activities that could adversely affect the viewshed. This is an exclusion area for all rights-of-way. SOUTH-9–OHV travel is limited to designated roads and trails in areas that are visible from the historic trails. SOUTH-10–About 22,190 acres (within the JMH project area) that are shielded by topography and not visible from the trail are open to development activities if they are subordinate to the landform and not visible from the historic trails, and provided that environmental analysis indicates that the visual integrity of the area can be maintained. Rights-of-way will be managed to avoid this area, and this area will not be considered as a preferred route for linear facilities. Small feeder lines could be allowed if analysis indicates that the visual integrity of the area will not be compromised. Rights-of-way along roads in the area could also be allowed if they do not compromise the visual integrity of the area. Prescriptions for the management of historic trails will also apply to this area. SOUTH-11–OHV travel is limited to existing roads and trails in these areas that are shielded by topography. SOUTH-12–All activities for the ACEC will be managed consistent with the Class II visual resource management classification. All management actions will be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer. The scenic values of the Highway 28 visual corridor (3 linear miles) will be protected. SOUTH-13–Generally, vibroseis activity and shothole activity is prohibited on and within 300 feet of the historic trails. Other geophysical operations may be allowed within the historic trails corridors (about 16.42 miles) if site-specific analysis determines that no effects adverse to the visual and historical integrity of the trails will occur. SOUTH-14–The entire ACEC is open to consideration of such activities that meet the objectives for the area. Activities include but are not limited to fencing, interpretive signs, or construction of barriers to ensure protection of the landscape. SOUTH-15–Livestock grazing objectives and management practices will be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems will be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian). SOUTH-16–Wild horse management in the area will be consistent with the Great Divide Basin Wild Horse Herd Management Plan and the management objectives for the area. No wild horse traps will be constructed within areas that are visible from the trails.
Steamboat Mountain ACEC	STEAM-1–MANAGEMENT OBJECTIVES: 1. To enhance and maintain the water quality, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem.

Resource	Objectives and Actions
	STEAM-2– 2. To maintain the unique diverse habitats (big sagebrush, aspen, limber pine, and mountain shrub communities) in the Steamboat Mountain area, especially on stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas. STEAM-3– 3. To provide suitable habitat to maintain the continued existence of the Steamboat elk herd and deer herd populations. STEAM-4–MANAGEMENT ACTIONS: The Steamboat Mountain area (43,270 acres) is designated as an ACEC. STEAM-5–All activities will be designed to place priority consideration on elk habitat over conflicting land uses to ensure continued elk use of the area. Steamboat Rim and the base of the rim will be managed to protect big game habitat, vegetation communities, and visual and recreation resources. STEAM-6–The ACEC is open to actions that will enhance the management objectives for the area. Actions that may be considered include fencing, interpretive signs, or construction of vehicle barriers. STEAM-7–Leasing and development of federal coal in the area will be considered for subsurface mining methods only. Development or mine plans will be required to ensure that adequate measures are taken to protect and maintain the elk herd and habitat. The location of surface facilities relating to subsurface mining will be considered on a case-by-case basis. Approximately 9,810 acres of federal coal lands with development potential occur within the Steamboat Mountain ACEC. STEAM-8–The ACEC is closed to mineral material sales. STEAM-9–The ACEC is an avoidance area for rights-of-way. Communication sites are prohibited in the ACEC. Linear rights-of-way and geophysical activities are allowed if impacts to the elk and the unique habitats can be mitigated. STEAM-10–Seasonal restrictions will be applied to land and resource uses as needed to protect elk and deer during severe winter conditions and during birthing periods. STEAM-11–The unique geological and ecological features in the ACEC will be protected by limiting or prohibiting intrusions and facilities, and by providing public interpretation of these features. STEAM-12–All activities in the area will be managed consistent with the Class II and Class III visual resource management classifications. All management actions will be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer.

Resource	Objectives and Actions
	STEAM-13–Motorized vehicle travel is limited to designated roads and trails. Seasonal road and trail closures may be implemented as necessary to protect elk and deer during critical winter and birthing periods. Transportation planning will be completed to identify the designated roads and trails. The May 10–July 1 seasonal closure for vehicular travel in the area remains in effect to protect big game calving and fawning activity. STEAM-14–Vegetation management will be designed to maintain, preserve, or enhance biological diversity while providing big game forage and cover requirements. Fire management activities will be designed to meet these objectives. Management of conifer communities will be limited to activities designed to control insects and disease. Dead standing trees will be managed under the "Animal Inn" program to help maintain biological diversity. Reseeding and reforestation within the ACEC will be accomplished with native species. Shrub species may be included in all seed mixes. STEAM-15–Livestock grazing objectives and management practices will be evaluated and, as needed, modified to be consistent with the management objectives for the ACEC. Grazing systems will be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian). STEAM-16–Any additional forage that becomes available in the ACEC will be allocated to wildlife use. STEAM-17–Management of an area where crucial elk winter range and parturition area overlap, will be addressed in the CAP for the Steamboat and Greater Sand Dunes areas. Progressive or sequential timing of development (disturbance of only one or two small areas at any given time) may be required. Vegetation and habitat management objectives described for the Steamboat ACEC will apply. These objectives are as follows: to enhance and maintain the water quality, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem; to maintain the unique diverse habitats (big sagebrush, aspen, limber pine, and mountain shrub communities) in the Steamboat Mountain area, especially on stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas; and to provide suitable habitat to maintain the continued existence of the Steamboat elk herd and other big game populations. This important habitat overlap area is within the elk herd unit (about 27,000 acres) but lies outside and adjacent to the ACEC.
Steamboat Mountain ACEC Deferred Decisions	STEAM-18–The fluid mineral leasing decisions and some locatable mineral decisions in the ACEC are deferred. Currently, leasing of unleased parcels and future parcels that may become available for lease is contingent upon completing a CAP encompassing the Steamboat Mountain and Greater Sand Dunes areas. The activity plan will identify feasible access, allowable road densities, guidelines for development of other minerals, and how much and what type of development will be acceptable. STEAM-19–Any determination to close parts of the ACEC to mineral location and to pursue withdrawals will be deferred to completion of the CAP. In the interim, those parts of the area not covered by withdrawals will remain open to mineral location, and a plan of operations will be required for any locatable mineral activity. Any plan of operations submitted by a mining claimant must address the impacts of mining on the Steamboat elk and deer herds to ensure that no unnecessary or undue degradation occurs. A site-specific environmental analysis will be required on each action.

Resource	Objectives and Actions
	STEAM-20–Deferred actions and mitigation requirements will apply to all surface disturbing activities, not just those related to oil and gas exploration and development. Surface disturbing and disruptive activities, such as road or utility development, general construction, range improvements, well drilling, and exploratory drilling, will be deferred until completion of the CAP. The CAP will cover such things as transportation; drilling pad density, drilling, and operations after well completion; development and location of range improvements; and recreational activities. Considerations to be addressed in developing the CAP: STEAM-21–Because the area has a high development potential for oil and gas resources, some specific considerations for oil and gas development to be addressed in the CAP are identified here. Design transportation plans to minimize fragmentation of habitats by limiting roads, access, and use. Remote control operations may be needed to accomplish this result. Centralizing locations for condensate may also be needed to limit trips into well locations, especially during parturition and crucial winter periods. To minimize effects to habitat, it may be necessary to place linear facilities above ground. STEAM-22–Vehicle use and access may not be feasible for much of the area. Access may be limited by low road densities necessary to achieve area management objectives. To prevent conflicts with big game, recreation users, and other resources, alternative access methods may be needed (such as use of existing roads, pads, and helicopters). STEAM-23–Unleased areas may be offered for lease with a No Surface Occupancy stipulation, but if the interior areas of such tracts are too large, they may not be leased. The No Surface Occupancy stipulation areas may only be accessed through directional drilling. The No Surface Occupancy stipulation will be used to facilitate rectifying drainage problems under the assumption that industry is the best judge as to whether technology enables access to the oil and gas resources under the terms of the lease.
White Mountain Petroglyphs ACEC	WHITE-1–MANAGEMENT OBJECTIVES: (1) To protect cultural resource values from degradation; and (2) To provide for wildlife and scenic values, and Native American concerns. WHITE-2–MANAGEMENT ACTIONS: The ACEC designation for the 20 acres of BLM-administered public lands in the White Mountain Petroglyphs area is retained. WHITE-3–The ACEC is open to consideration of such activities as fencing, interpretive signs, or construction or placement of barriers to ensure protection of the site. WHITE-4–The entire area is an exclusion area and closed to the following: 1. Surface disturbing activities that could adversely affect the resource values in the area 2. Location of mining claims and entry under the land laws (the existing withdrawal will be retained) 3. Mineral material sales for sand, gravel, or other types of construction or building materials 4. Use of explosives and blasting 5. Rights-of-way.

Resource	Objectives and Actions
	WHITE-5–The ACEC is closed to OHV travel, including vehicles used for geophysical exploration activities, and is closed to the use of fire retardant chemicals containing dyes. WHITE-6–Vibroseis activities are prohibited within 300 feet of the rock art site. Other kinds of activities, such as audible disturbances, may not be allowed if the sacred Native American values at the rock art sites would be adversely affected. WHITE-7–The ACEC will be managed consistent with the Class II visual resource management classification. WHITE-8–Lands visible within a one-half-mile radius of the rock art site (vista) will be an avoidance area and are open for consideration of such activities as fencing, interpretive signs, or construction and placement of trail and OHV barriers to ensure protection of the rock art. Most surface disturbing activities visible within the vista are prohibited. Some activities within one-half-mile of the rock art but not visible from the panels will be allowed if they do not affect the rock art site.
Red Desert Watershed Management Area	RED-1–MANAGEMENT OBJECTIVE: To manage for all resource values in the Red Desert area, with emphasis on protection of visual resources, watershed values, and wildlife resources; and to provide large areas of unobstructed views for the enjoyment of scenic qualities. This result will be accomplished through facility design and placement, use of topography to shield activities, use of neutral colors so that facilities blend with the landscape, identification of backcountry byways, and the provision of viewing points for the public. RED-2–MANAGEMENT ACTIONS: The Red Desert Watershed Area includes BLM-administered public lands north of the checkerboard boundary within the Great Divide Basin (168,950 acres in JMH). RED-3–The Red Desert Watershed Area will be managed to ensure that developments and activities conform to the concepts of open space. The area will be managed consistent with the Class II and Class III visual resource management classifications. RED-4–Restrictions for protection of raptors, big game crucial winter range, and big game calving/fawning areas will apply. RED-5–Surface disturbing activities, mineral exploration and development, and seismic activities will continue where acceptable subject to the management guidelines provided in the Minerals section. RED-6–About 2,500 acres are closed to surface disturbing activities to protect special status plant species and important historic resource values in the area. RED-7 Approximately 2,710 acres of federal coal lands with development potential in the area are open to consideration of coal leasing and development (see Coal section). Most of the area is open to consideration of salable minerals activities and mineral location. RED-8–The coal and stock driveway withdrawals will be revoked.

Resource	Objectives and Actions
	RED-9–The preferred route for rights-of-way in the management area is the east-west window described in the Lands and Realty Management section. Other areas will be considered if in conformance with wildlife, watershed, cultural, and scenic resource management objectives.
	RED-10–Overhead powerlines are prohibited in the area.
	RED-11–Approximately 73,360 areas are closed to OHV use, and the remainder is limited to designated roads and trails.
	RED-12–Recreational activities, opportunities, and uses will be maintained. A Tri-Territory Loop and Red Desert backcountry byway will be established.
	RED-13–Livestock grazing objectives will be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems will be designed to achieve desired plant communities and proper functioning condition of watersheds.
	RED-14–Wild horse management in the area will be consistent with the Great Divide Basin Wild Horse Herd Management Plan and the management objectives for the area.
	RED-15–Vegetation resources in the area will be managed for continued livestock grazing and wild horse and wildlife uses in accordance with the management objectives for those resource values.

APPENDIX 3—BIOLOGICAL ASSESSMENT

Under provisions of the federal Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. Section 1531 et seq.), federal agencies are directed to conserve threatened and endangered species and the habitats in which these species are found. Federal agencies are also required to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of endangered and threatened species or their critical habitat. The ESA requires action agencies, such as the Bureau of Land Management (BLM), to consult or confer with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) when there is discretionary federal involvement or control over the action. Formal consultation becomes necessary when the action agency requests consultation after determining that the proposed action may affect listed species or critical habitat or the aforementioned federal agencies do not concur with the action agency's finding (USFWS 1998).

Under the 1994 Memorandum of Understanding (MOU) and the 2000 Memorandum of Agreement (MOA) among the BLM, U.S. Forest Service, USFWS, and NMFS, all four agencies agreed to promote the conservation of candidate and proposed species and streamline the Section 7 consultation and coordination process.

This programmatic biological assessment provides documentation for the Proposed Jack Morrow Hills Coordinated Activity Plan (JMH CAP) to meet federal requirements and agreements set forth among the federal agencies listed above. It addresses federally listed threatened and endangered, candidate, and proposed species and experimental populations and has been prepared under the 1973 ESA Section 7 regulations, in accordance with the 1998 procedures set forth by USFWS and NMFS, the 1994 MOU, and the 2000 MOA. In addition to the above, site-specific evaluations will be conducted for activities authorized under the JMH CAP. Consultation or conferencing will occur with the USFWS for all future activities that might affect threatened, endangered, candidate, and proposed species or experimental populations.

PROJECT DESCRIPTION

The primary objective of this project is to prepare a Jack Morrow Hills Coordinated Activity Plan that provides specific management direction to prevent or address potential conflicts among mineral resources development, recreational activities, livestock grazing, important wildlife habitat, and other important land and resource uses in the planning area, and determines the appropriate levels and timing of leasing and development of energy resources. Decisions made as a result of the Record of Decision (ROD) for the JMH CAP will result in amendment of the Green River Resource Management Plan (RMP).

The general planning area for the JMH CAP covers approximately 622,000 acres located in southwestern Wyoming. The area includes the BLM-administered lands located north and east of Rock Springs, Wyoming, and extends across parts of the counties of Sweetwater, Sublette, and Fremont (Map 1). The area is bounded on the west by U.S. Highway 191, on the north by State Highway 28, on the south by County Road 17, and on the east by County Roads 74 and 15.

Further information on the JMH CAP alternatives, affected environment, and environmental consequences is available in Chapters 2, 3, and 4, respectively, of the final environmental impact statement (EIS). The Proposed JMH CAP is discussed in Section 2.7 of the final EIS. Analysis of the Proposed JMH CAP is discussed in the last section of each resource category section of Chapter 4. Appendices 5 and 6 of the final EIS outline Wyoming BLM mitigation guidelines and standard practices, best management practices, and guidelines for surface disturbing activities, respectively. Appendix 20 of

the final EIS summarizes the significance criteria and assumptions used for analysis of the JMH CAP alternatives and cumulative impacts analysis contained in Chapter 4.

FEDERAL THREATENED AND ENDANGERED SPECIES

Bald Eagle (*Haliaeetus leucocephalus*)

Federal Status: Threatened State Status: NSS2[1]

Critical Habitat: No Recovery Plan: Yes

Species Biology and Habitat Requirements

The bald eagle has a conspicuous white head and tail, a blackish-brown back and breast, and yellow feet and bill. The distinctive white plumage on the head and tail, for which the species is named, is not attained until a bird is 5 or more years of age. The female bald eagle is approximately 35 to 37 inches long with a wingspan from 79 to 90 inches. The male bald eagle is slightly smaller than the female, with a body length of 30 to 34 inches and a wingspan of 72 to 85 inches. Wild bald eagles may live as long as 30 years, but the average lifespan is probably about 15 to 20 years (Rutledge 1996–2000).

Bald eagles are found primarily along surface water sources (e.g., rivers, lakes, coasts) where their nests are usually located in large trees. They often use and rebuild the same nest each year, which is typically about 5 feet in diameter. Nest trees are usually close to water, afford a clear view of the surrounding area, and often provide sparse cover above the nest. Breeding typically begins in February or March, and the female lays a clutch ranging from one to three eggs in March or April. Both the male and female incubate the eggs for about 35 to 40 days, resulting in usually one or two eaglets produced by the pair (Stalmaster 1987). Young eagles remain in the nest for approximately 75 days. After the breeding season, bald eagles congregate where food is plentiful, and they may continue to roost near the nest tree.

During winter, bald eagles congregate near rivers and reservoirs with open water and often near large concentrations of waterfowl. Wintering eagles usually occupy river habitats between November 15 and April 30 and use large cottonwoods, poplars, and other riparian trees as daytime perches and night roosts. They usually perch within a riparian corridor or along lakeshores and prefer areas with limited human activity. Feeding areas, diurnal perches, and night roosts are fundamental elements of bald eagle winter range. Wintering bald eagles primarily occur where all three of these elements are in close proximity (Swisher 1964).

Food availability is probably the single most important factor affecting winter bald eagle distribution and abundance (Steenhof 1976). Fish and waterfowl are the primary sources of food for bald eagles, but they will also feed on rabbits, carrion, and small rodents. The hunting area or home range patrolled by a bald eagle varies from 1,700 to 10,000 acres. Home ranges are smaller where food is present in great quantity.

Population Distribution

Bald eagles occur over most of North America at some time during the year and breed across at least half of the continent. The largest populations occur in the Pacific Northwest, western Canada, and southern Alaska.

---

[1] Species in which habitat is restricted or vulnerable (but no recent or significant loss has occurred) and whose populations are greatly restricted or declining or (2) species with ongoing significant loss of habitat and populations that are declining or restricted in numbers and distribution (but extirpation is not imminent).

The planning area and surrounding areas were surveyed for raptor nests and potential nesting sites in 1980. In addition, numerous routine surveys in the planning area have been conducted for mineral development and range projects. Within the planning area, bald eagles are classed as casual migrants and have been observed feeding on carrion near Pacific Butte and Jack Morrow Creek. No known roost or nest sites are within the planning area; however, bald eagles regularly winter in the Farson/Eden communities near the planning area. They roost in cottonwood and poplar trees around ranches and home sites. Currently, the only known active bald eagle nesting site near the planning area is on the Green River on Seedskadee National Wildlife Refuge, which is a minimum of 30 miles from the planning area.

Conflicts

The accelerated decline in numbers of the species since World War II has been attributed to several factors. Some of these factors are unauthorized poison baits on public lands, shooting, and electrocution.

Effects of the Proposed JMH CAP

Because the bald eagle is a casual migrant within the planning area, no potential exists for roosting or nesting, and foraging occurs only during the big game hunting season (gut piles), no effects are expected to occur.

Determination: No effect

***Minimization Measures*:** None required

Black-Footed Ferret (*Mustela nigripes*)

Federal Status: Endangered State Status: NSS1[2]

Critical Habitat: No Recovery Plan: Yes

Species Biology and Habitat Requirements

The black-footed ferret is a member of the weasel family (*Mustelidae*), which includes the skunk, badger, fisher, marten, otter, mink, wolverine, and weasel. Black-footed ferrets have a long thin body, short legs, and a very flexible spine, allowing them to run through small tunnels and turn in tight spaces. These adaptations allow them to live underground in prairie dog colonies where the temperature is more uniform than on the surface, conserving water is easier, and protection is provided from surface predators. Potential predators include badgers, coyotes, bobcats, golden eagles, great-horned owls, ferruginous hawks, and domestic dogs. Black-footed ferrets are strong and limber, allowing them to catch and kill prey larger than themselves. Adults are 18 to 22 inches long and weigh between 1 and 2½ pounds. Ferrets live alone except during the breeding season. The kits are born in May or June, usually in litters of three or four.

The black-footed ferret is closely associated with prairie dogs, depending almost entirely on the prairie dog for its survival. The black-footed ferret's diet may also contain some other small mammals and birds. Potential areas of ferret habitat can be delineated because of the ferret's association with prairie dogs. The planning area is within the range of white-tailed prairie dogs, and ferrets may occur within colonies of this species. The USFWS has determined that, at a minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog town or complex of greater than 200 acres or a

[2] Includes species with ongoing significant loss of habitat and with populations that are greatly restricted or declining (extirpation appears possible).

complex of two or more neighboring prairie dog towns, each less than 4.3 miles from the other and totaling 200 acres and whose density meets or exceeds 8 burrows per acre (USFWS 1989).

Primarily nocturnal, ferrets spend much of their time below ground and are rarely seen during daylight hours. This behavior is probably one of the reasons why so few sightings have been recorded in this planning area and elsewhere.

Population Distribution

Black-footed ferrets are the only ferrets native to North America. They have lived in North America for at least 30,000 years and have lived everywhere that prairie dogs have lived. At one time, black-footed ferrets and prairie dogs ranged throughout the Great Plains and intermountain basins of the Rockies, from Canada to Mexico.

Populations of black-footed ferrets are undetermined in the planning area. Historical documentation exists of the presence of ferrets near the planning area as recently as 1963 when a ferret and kits were commonly seen by several persons in the southwest part of Eden Valley. There have been other sightings near the planning area as recently as 1983. Other areas where ferrets are presumed to have occurred are Sublette Flats, Seedskadee National Wildlife Refuge (outside the planning area), and the Red Desert. The USFWS has conducted some surveys and prairie dog colony inventories in the field office area since 1981. The Wyoming Game and Fish Department (WGFD) mapped and surveyed a large white-tailed prairie dog colony (the Sweetwater complex) bordering the planning area in 2003. Although the colony is of sufficient acreage, it is unknown whether it contains sufficient densities of white-tailed prairie dogs to support a ferret.

Conflicts

Past prairie dog control programs, conversion of habitat for agriculture, and the introduction of plague have caused the greatest impacts on black-footed ferret populations.

From the 1920s until the mid-1970s, predator control through trapping and poisoning also resulted in significant black-footed ferret mortality (67 percent of positive ferret reports). Secondary poisoning of ferrets is also known to have occurred from highly toxic rodenticides (or predicides) used in prairie dog eradication programs.

Recreational shooters often seek out prairie dog colonies for shooting. Because distinguishing between a ferret, a burrowing owl, or a prairie dog peering over a prairie dog mound is difficult, it is assumed that some black-footed ferrets have been killed accidentally by shooters.

Land use activities such as rights-of-way, energy developments, use permits, mineral extraction, and grazing can reduce, degrade, or fragment ferret habitat. Any projects with a federal nexus that may affect potential black-footed ferrets will require inventories and clearances prior to the activity beginning. Habitat losses have been minimized through coordination and management prescriptions requiring surveys and avoidance of potential black-footed ferret habitat.

Effects of the Proposed JMH CAP

Effects to the black-footed ferret include possible direct take by sport shooters and collisions with vehicles. Indirect take of the black-footed ferrets can occur from reduction or elimination of habitat from surface disturbing activities (e.g., oil and gas development, exploration activities, mining, rights-of-way, range improvement projects) on or near prairie dog towns or colonies as a result of these activities. Use

of off-highway vehicles (OHV) and other recreational activities in the planning area may also affect the species through disruption and disturbance of habitat.

Determination: May affect, but not likely to adversely affect

Minimization Measures: Black-footed ferret surveys would be completed according to current USFWS protocol within 1 year prior to conducting any surface disturbing or disruptive activities in potential ferret habitat areas (prairie dog towns or complexes of 200 or greater with sufficient density). In addition, should a ferret or sign of a ferret be found after the surveys are completed, all disruptive activities would be halted until protective measures developed with the USFWS could be implemented. BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction within the JMH CAP planning area.

Measures would also be taken to reduce potential raptor perches in and around prairie dog towns and colonies (e.g., rerouting, burying power lines where feasible, or incorporating ant-perch devices where burying is not possible).

Black-footed ferret habitat would be protected from habitat degradation, and BLM would take proactive measures to improve vegetative character on an as-needed basis, per BLM 6840 policy and Section 7 of the Endangered Species Act.

Ute Ladies'-Tresses *(Spiranthes diluvialis)*

Federal Status: Threatened State Status: None

Critical Habitat: No Recovery Plan: Yes

Species Biology and Habitat Requirements

Ute ladies'-tresses orchid is a perennial herb with erect, glandular-pubescent stems 12 to 50 cm tall arising from tuberous-thickened roots. This species flowers from late July to September. Plants probably do not flower every year and may remain dormant below ground during drought years. Flowers are white to ivory in color, faintly fragrant with a spicy scent of coumarin, and 7.5 to 15 mm long. Flower clusters are spirally arranged around the central flowering stalk, with green bracts below each flower. Reproduction is strictly sexual.

Ute ladies'-tresses orchid grows on moist, sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams between 1,780 and 6,800 feet elevation (Fertig and Beauvais 1999). Populations have been documented from alkaline sedge meadows, riverine floodplains, flooded alkaline meadows adjacent to woodlands of ponderosa pine and Douglas fir, sagebrush steppe, and streamside floodplains.

Known sites of this species often have low vegetative cover and may be subjected to periodic disturbances (e.g., flooding or grazing). Populations are often dynamic and shift within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999). The Ute ladies'-tresses orchid is well adapted to disturbances from stream movement and is tolerant of other disturbances, such as light grazing, that are common to grassland riparian habitats and reduce competition between the orchid and other plants (USFWS 1995). It is known to establish in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails (USFWS 1995). The species is commonly associated with horsetail, wild licorice, yellow sweet clover, blue-eyed grass, goldenrod, and arrowgrass.

Population Distribution

The Ute ladies'-tresses orchid is known to occur from western Nebraska, southeastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central Idaho, southwestern Montana, and north-central Washington (Moseley 1998). The total population is approximately 20,500 individuals.

The Ute ladies'-tresses has not yet been found in southwest Wyoming, although BLM-authorized searches for the species have been performed at several locations along the Green River. The closest known location of the Ute ladies'-tresses to the planning area is on the Green River at Brown's Park, Utah. Potential suitable habitat (all riparian areas below 7,000 feet in elevation) in the planning area was surveyed from 1999 to 2001 with no findings.

Conflicts

The riparian and wetland habitats required by this species have been heavily impacted by urban development, heavy grazing, stream channelization, water diversions, and other watershed and stream alterations that reduce the natural dynamics of the stream system, recreation, and invasion of habitat by exotic plant species (USFWS 1995).

Effects of the Proposed JMH CAP

Although surveys of planning area potential habitat concluded there were no populations of the Ute ladies'-tresses, effects from development activities could occur if the plants were to come out of dormancy when and if current drought conditions cease.

Determination: May affect, but not likely to adversely affect

Minimization Measures: To gather as much information about this species as possible and comply with the provisions of the ESA and BLM national policy, the Rock Springs BLM requires surveys of all suitable areas that could provide habitat for this species prior to engaging in surface disturbing activities (e.g., oil and gas development, exploration activities, mining, rights-of-way, range improvement projects). In addition, should a Ute ladies'-tresses be found after the surveys are completed, all disruptive activities would be halted until protective measures developed with the USFWS can be implemented. Mandatory surveys and avoidance would help to prevent adverse effects to this species within the planning area.

Ute ladies'-tresses habitat would be protected from habitat degradation, and BLM would take proactive measures to improve vegetative character on an as-needed basis, per BLM 6840 policy and Section 7 of the Endangered Species Act.

Blowout Penstemon *(Penstemon haydenii)*

Federal Status: Endangered State Status: None

Critical Habitat: No Recovery Plan: Yes

Species Biology and Habitat Requirements

The blowout penstemon is a milky-blue, aromatic, perennial herb. This species flowers from May to early July and produces fruits from late June to mid-July. Each fruit contains an average of 25–35 seeds. Seeds are released in late August to September and are often buried in shifting sand and can remain viable for 20 years. Prolonged wet conditions and abrasion are required for breaking dormancy and seed

germination. The plant is primarily an out-crosser (transfers genes from one plant of the same species to another plant of the same or closely related species), although studies show that it is potentially self-fertile (Fertig 2000).

The blowout penstemon occurs in "blowouts," sparsely vegetated depressions in active sand dunes created by wind erosion. In Wyoming, the blowout penstemon occurs on steep, north-facing slopes of active blowout-like sand dunes with sparse cover of blowout grass, thickspike wheatgrass, lemon scurfpea, and occasional rubber rabbitbrush. Plants are not evenly distributed throughout their habitat but are found in sparse, nonrandom clusters (Fertig 2000).

Population Distribution

There are two known endemic populations of the blowout penstemon exist in the United States, one in the sand hills of west-central Nebraska and two in the northeastern Great Divide Basin in Carbon County, Wyoming. The Wyoming population was first discovered in 1996; however, site visits were conducted annually until July 1999 to confirm the identity of the species. Currently, only 3,500–5,000 plants are found at approximately 13 sites in Nebraska. The Wyoming populations are divided into at least eight main subpopulations that occupy approximately 80 acres within a 5-square-mile area. Based on surveys in 2000, the total Wyoming population is estimated at 4,150–5,840 individuals. The largest population in the state (and apparently the world) occurs on the south slopes of Bear Mountain and adjacent Junk Hill, numbering 3,950–5,540 plants in July 2000. The Bradley Peak population, estimated at 300–500 plants in 1999 (Fertig 2000), apparently declined to 200–300 individuals in 2000. A species survey of potential habitat within the Killpecker Dunes of the planning area was conducted in 2000 with no identification of additional populations.

Conflicts

No long-term trend data are available on the Wyoming population. The cause of the sharp decline in the Nebraska population is also unknown, although wildfire control, severe drought, improvements in range management, leveling of sand dunes, and outbreaks of pyralid moths have all been identified as possible causes (Fertig, 2000).

Effects of the Proposed JMH CAP

Although surveys of known potential habitat within the planning area concluded there were no populations of the blowout penstemon, effects from development activities (e.g., oil and gas), livestock grazing, or recreation could occur because of the future possibility of finding additional habitat within the planning area.

Determination: May affect, but not likely to adversely affect

Minimization Measures: To gather as much information about this species as possible and comply with the provisions of the ESA and BLM national policy, the Rock Springs BLM requires surveys of all suitable areas that could provide habitat for this species prior to engaging in surface disturbing activities. In addition, should a blowout penstemon be found after completion of the surveys, all disruptive activities would be halted until protective measures developed in coordination with the USFWS can be implemented. Mandatory surveys and avoidance would help to prevent adverse effects to this species within the planning area.

Blowout penstemon habitat would be protected from habitat degradation, and BLM would take proactive measures to improve vegetative character on an as-needed basis, per BLM 6840 policy and Section 7 of the Endangered Species Act.

Grizzly Bear (*Ursus arctos horribilis*)

Federal Status: Threatened State Status: Trophy Game Animal

Critical Habitat: No Recovery Plan: Yes

Species Biology and Habitat Requirements

The grizzly bear (grizzly) is one of the largest North American land mammals and is the largest North American omnivore. Male grizzlies stand approximately 8 feet tall, are 3.5 to 4.5 feet at the hump when on all fours, and weigh from 400 to 600 pounds. Females are smaller, usually weighing between 250 and 350 pounds.

Adult grizzlies are generally solitary except when caring for young or during breeding periods. Strict territoriality is unknown, with intra-specific defense limited to specific food concentrations, defense of young, and surprise encounters. Mating season is the only time that adult males and females tolerate one another, and then only during the estrous period. Other social affiliations are generally restricted to family groups of mother and offspring, siblings that may stay together for several years after being weaned, and an occasional alliance of subadults or several females and their offspring (Jonkel and Cowan 1971; Craighead 1976; Herrero 1978).

Home ranges of adult males are generally two to four times larger than those of females (Craighead 1976; Herrero 1978). These home ranges vary in relation to food availability, weather conditions, and interactions with other bears. Thus, the home range may vary seasonally or from year-to-year (Jonkel and Cowan 1971; Craighead 1976).

Key habitat characteristics include (1) availability of preferred foods, such as whitebark pine (*Pinus albicaulis*) seeds, army cutworm moths (*Euxoa auxiliaries*), large ungulates (newly born young and winter kills), and spawning cutthroat trout (*Oncorhynchus clarki*) (Mattson et al. 1991); (2) sufficient cover for bedding and security (Moody et al. 2002; USFWS 1993); and (3) denning locations (USFWS 1993). There is a high preference for forested habitat that provides protection from threats and disturbances. Most suitable grizzly habitat, both biologically and socially, is in areas with large tracts of undisturbed habitat and minimal human disturbance (Moody et al. 2002).

Winter hibernation, which lasts approximately 5 months, is brought on by the decreasing length of daylight and inclement weather. In preparation for this period, grizzlies excavate dens that are usually found at high elevation, on steep slopes where wind and topography cause an accumulation of deep snow, and are well away from areas of human activity (USFWS 1993).

Population Distribution

Historically, the distribution of grizzly bears included the western half of North America. Today, they have disappeared from more than half their former range. Within the United States, grizzly bears persist as identifiable populations in five areas: the Northern Continental Divide, Greater Yellowstone, and Cabinet-Yaak, Selkirk, and North Cascade ecosystems. All these populations, except Yellowstone's, have some connection with grizzlies in southern Canada. Grizzlies potentially occur in two other areas:

the San Juan Mountains of southern Colorado and the Bitterroot ecosystem of Idaho and Montana (Mattson et al. 2003).

Grizzlies were reported in the JMH CAP planning area in July 1841 (Dorn 1986). The JMH CAP planning area is well away (approximately 100 aerial miles) from the Yellowstone Primary Conservation Area (ICST 2003). However, the northern border of the planning area (Wyoming State Highway 28) is the southern most boundary of the Wyoming State Bear Management Area.

Conflicts

A major cause of grizzly population decline is habitat loss. This loss is a result of conversion of native vegetation, depletion of preferred food resources, disturbance, displacement from human developments and activities, and fragmentation of habitat into increasingly small blocks that are inadequate to maintain viable populations. Roads are a major factor in displacing grizzlies, especially the level of traffic associated with a road. Grizzlies living near roads have a higher probability of human-caused mortality as a consequence of illegal shooting, control actions influenced by attraction to unnatural food sources, and vehicle collisions (Moody et al. 2002).

Although no legal sport harvest occurred from 1975 to 2000, 194 known and probable human-caused grizzly bear mortalities were documented in the Yellowstone ecosystem (WGFD 2001). Since the listing of the grizzly, federal law has allowed legal take of any grizzly that was an immediate threat to human safety. Authorized state or federal agency personnel have also taken grizzly bears (classified as management removals) for chronic livestock depredations, property damage, or threat to public safety.

Effects of the Proposed JMH CAP

Currently the WGFD manages the bears in Wyoming outside of Yellowstone and Grand Teton National Parks. Although grizzly bears were historically observed in the planning area, the current habitat available in the planning area lacks cutthroat trout, large moth hatches, and whitebark pine and is characterized by high-desert habitat lacking sufficient forbs and tender grasses (all important grizzly foods). The area is also expected to present many problems associated with bear/livestock conflicts and is highly fragmented by roads. The large herds of bison (*Bison bison*) and bighorn sheep (*Ovis canadensis*) that once supported the grizzly here no longer exist in the planning area. It is our determination that the planning area is no longer capable of supporting a grizzly bear. Under the WGFD Grizzly Bear Management Plan (2002) any bears wondering into the planning area would most likely be relocated due to conflicts with humans and livestock.

Determination: No effect

Minimization Measures: None required

Gray Wolf (*Canis lupus*)

Federal Status:	Nonessential Experimental Population in the Greater Yellowstone ecosystem (GYE)
State Dual Status:	Trophy Game Animal (wolf management areas); Predator (remainder of Wyoming)
Critical Habitat:	No
Recovery Plan:	Yes

Species Biology and Habitat Requirements

Gray wolves are the largest wild members of the canine (*Canidae*), or dog family, with adults ranging from 80 to 110 pounds depending on gender. Height averages 26–32 inches at the shoulder, and length typically measures 4.5–6.5 feet from nose to tail tip. Approximate track size is 4 inches wide by 5 inches long. Pelt color can be highly variable ranging from white to black, with grizzled gray or black being most common in the northern Rocky Mountains (USFWS 1994).

Wolves form family groups referred to as packs. A pack consists of at least two individuals that breed and produce pups. The dominant male and female in the pack produce most of the young though packs may contain two or more adult females that produce (Mech 1991). Breeding occurs during February or March, and pups are born after a 63-day gestation in April or May. Litter sizes in Wyoming have averaged approximately five pups from 1997–2001 (USFWS et al. 2002). Pups remain at the den site for approximately 6 weeks until they are weaned. The pack then moves to rendezvous sites (home sites) until the pups are old enough to hunt with the pack. When pups begin hunting, these rendezvous sites are no longer used and the pack ranges throughout its territory.

Yearlings tend to leave the pack during fall to find a mate and develop a new territory and pack (Fritts and Mech 1981); however, some individuals stay with the pack longer. Pack territories are defended against other wolves. Territory location is advertised to other wolves through scent marking and howling. Territory size appears related to prey density (Ballard et al. 1987; Fuller 1989). Pack sizes typically range from 2–16 wolves but may vary in relation to the size of prey species. The average size of the eight wolf packs currently in Wyoming outside of Yellowstone National Park in 2001 was 8.7 (range 2–12) (USFWS et al. 2002).

Population Distribution

The gray wolf (*Canis lupus*) originally occupied all habitats in North America north of approximately 20° north latitude (in Mexico), except for the Southeastern United States, where the red wolf (*Canis rufanis*) lived. By 1960 the wolf was exterminated by federal and state governments from all of the United States except Alaska and northern Minnesota. Wolves were virtually absent in the western United States (other than an occasional animal that disperses from Canada) from the mid-1930s through 1980 (Ream and Mattson 1982). The nearest breeding population through this period was probably in Banff National Park, Alberta. This led to recolonization of the area and adjacent northwestern Montana, and in 1986 a den was documented in Glacier National Park, Montana (Ream et al. 1989).

The wolf was extirpated from Wyoming by the 1930s and from that time through the early 1990s, occasional wolf sightings occurred though no reproduction was documented. With the goal of reestablishing a sustainable gray wolf population in the northern Rocky Mountains (Wyoming, Idaho, and Montana), the USFWS reintroduced 31 wolves to Yellowstone National Park and 35 wolves to central Idaho in 1995 and 1996 (Bangs et al. 1998). The northern Rock Mountain wolf population is now comprised of three recovery areas: northwest Montana, central Idaho, and the Greater Yellowstone area. The Greater Yellowstone recovery area (GYA) includes all of Wyoming, including Yellowstone National Park, Grand Teton National Park, the National Elk Refuge, and adjacent parts of Idaho and Montana (WGFD 2003). These wolf populations have rapidly expanded in both numbers and distribution calling for possible delisting and the drafting of state management plans in Idaho, Montana, and Wyoming.

Within the JMH CAP planning area, a wolf sighting was recorded in June of 1834 by William Anderson just west of South Pass (Dorn 1986). One known location of a lone wolf within the JMH CAP planning area was reported by WGFD personnel in 2002. This wolf has not been seen since and is believed to have been a young animal, most likely dispersing and looking for a new home range. Wolf sightings have also

occurred outside the planning area to the east (Red Desert) and the west (near Granger) of the planning area.

Conflicts

Direct take by people tends to be the highest form of mortality. Since 1995, 53 percent of documented wolf mortalities in the GYA have been caused by humans (Smith and Guernsey 2002). In areas where human exploitation is low, disease, starvation, and killing by other wolves are the primary causes of wolf mortality.

Effects of the Proposed JMH CAP

Under the current federal management as a Nonessential Experimental Population, any wolves occurring in the planning area will be captured and relocated or destroyed if conflicts occur. When the wolf is removed from the Endangered Species List, the State of Wyoming will be responsible for management of the wolf. Under the current state plan, the wolf is classified as a "Predator" in the planning area and can be shot at will (WGFD 2003).

Determination: Not likely to jeopardize the continued existence of the species

Minimization Measures: Not required

CANDIDATE SPECIES

Western Population of Yellow-Billed Cuckoo (*Coccyzus americanus*)

Federal Status: Candidate State Status: NSS2[3]

Critical Habitat: No Recovery Plan: No

Species Biology and Habitat Requirements

The western population of the yellow-billed cuckoo (cuckoo) is a slender, long-tailed, robin-sized bird with a moderately long, down-curved bill. It is brownish gray in color with white underparts and a striking yellow base of the lower mandible, for which the species is named. The outer tail feathers have distinctive broad white tips, giving the appearance of six large white spots on the underside. Although more than 75 percent of the cuckoo's diet comprises grasshoppers and caterpillars, they have been known to eat beetles, cicadas, wasps, flies, lacewings, mosquito hawks, and other insects.

Cuckoos arrive on their western breeding grounds in mid-June and leave for South America by late August. Breeding often coincides with the appearance of large numbers of spring insects. Cuckoos have the shortest combined incubation/nesting period of any bird species. Clutch size usually ranges between three and five, and egg incubation is shared by both males and females. Though unable to fly, the newly fledged young are adept crawlers, traveling up to 150 feet on their first day out of the nest. After 3 to 4 weeks, they are able to begin their migration to South America (Center for Biological Diversity 2002).

Cuckoos are primarily found in open, streamside deciduous woodland with low scrub vegetation. They generally prefer cottonwood stands for foraging and willow thickets for nesting. They also require

[3] Species in whieh (1) habitat is restrieted or vulnerable (but no reeent or significant loss has oceurred) and populations are greatly restricted or declining or (2) speeies with ongoing significant loss of habitat and populations that are deelining or restrieted in numbers and distribution (but extirpation is not imminent).

relatively large riparian tracks below 7,000 feet for breeding, which are severely limited in Wyoming (WYNDD 2002).

Population Distribution

The cuckoo formerly ranged across southern Canada, the United States, and northern Mexico. It has been nearly extirpated in the West and is restricted to small isolated populations. It is considered extremely rare in the Northern Rockies and Great Plains. An estimated 90 percent of the bird's riparian habitat in the West has been destroyed or degraded as a result of human activity. The species is no longer found in British Columbia, Washington, Oregon, or Nevada.

Little is known about the historic distribution of cuckoos in Wyoming; reported observations have been relatively few. Breeding pairs may be found in the Green River and Powder River Basins, along the North Platte River to Casper, and along the Henry's and Black's Fork Rivers. One observation of the cuckoo in 1994 was made at Seedskadee National Wildlife Refuge, which is a minimum of 30 miles from the planning area. Within the planning area, the type of habitat the cuckoo prefers is severely limited. There are no cottonwoods but only small thickets of coyote willow near the Sweetwater River. All riparian areas are also located above 7,400 feet in elevation. No formal surveys within the planning area have been conducted.

Conflicts

Loss of habitat is probably the greatest threat facing the cuckoo. Dams and river flow management, overgrazing, land conversions associated with agriculture, and infestations of exotic plants have severely impacted riparian habitat throughout the West, including Wyoming (Laymon 1987; Hughes 1999; UDSI FWS 2000, 2001).

Effects of the Proposed JMH CAP

No potential habitat exists within JMH CAP planning area because of lack of trees for foraging and the high altitude of all riparian areas in the planning area (exceeds 7,400 feet). As stated in information from the Wyoming Natural Diversity Database, yellow-billed cuckoo require relatively large riparian tracks below 7,000 feet for breeding (WYNDD 2002).

Determination: No effect

Minimization Measures: None required

Water Depletions

There are three watersheds draining the planning area (Map 61): Green River Basin (60 percent), Platte River Basin (9 percent), and Great Divide Basin (31 percent). The Pacific, Jack Morrow, and Killpecker Creeks are part of the Green River Basin, which drains into the Colorado River Basin, and the Sweetwater River is part of the Platte River Basin. The Great Divide Basin is a closed watershed and therefore does not drain into either the Colorado or Platte River Basins.

Water developments from these two systems (the Colorado and Platte River Basins) have caused reduced peak discharges and pulse flows, which are having a negative effect on downstream species. Water depletions reduce the ability of the river system to create and maintain important habitats for these species by limiting nutrient supply and productivity, and therefore food supply, brought about by high spring flows. They are also contributing to incremental reductions in groundwater levels, which adversely affect

wetland habitats because of their requirement of periodic saturation near or above the soil surface to maintain their characteristics.

The depletions caused by activities within the Colorado River drainage in the JMH CAP area were described in the Green River RMP and addressed in its Biological Opinion. However, Platte River depletions were not identified in that document and the oil and gas reasonably foreseeable development (RFD) for this area has been updated. Because of this, a description of new depletions specific to this project area is provided. For purposes of comparison or tracking, water depletions are anticipated to occur by using water for the drilling of oil and gas wells (typical deep wells and coalbed gas wells) and potentially from livestock watering pits or ponds. Water that would be withdrawn from an aquifer during the coalbed gas process and the extent to which it connects to surface flows would be analyzed in site-specific environmental documents. Historic depletions were addressed in the Green River RMP (for the Colorado River Basin) and the *Programmatic Biological Assessment for Minor Water Depletions Associated with Reissuing of BLM Grazing Leases in the Platte River Basin,* July 1, 1999 (for the Platte River Basin) and are repeated in this document for tracking purposes.

Colorado River Species

Four species of fish in the upper Colorado River system are federally listed as endangered. They are the Colorado pikeminnow (*Ptychocheilus lucius*), the humpback chub (*Gila cypha*), the bonytail chub (*Gila elegans*) and the razorback sucker (*Xyrauchen texanus*). Although these fish currently exist only downstream from the planning area, water from the Upper Green River basin affects their downstream habitat. Historically, under the Recovery and Implementation Program (RIP) for Endangered Fish Species in the Upper Colorado River Basin, any water depletions from tributary waters within the Colorado River drainage were considered as jeopardizing the continued existence of these fish. Tributary water is defined as water that contributes to instream flow habitat. Depletion is defined as water that would contribute to the river flow if not intercepted and removed from the system.

The RIP was developed as part of a cooperative effort between Colorado, Utah, and Wyoming; the Bureau of Reclamation (BOR); USFWS; private water development interests; and various environmental groups. In addition, a cooperative agreement was signed by the governors of Colorado, Utah, and Wyoming; the Secretary of the Interior; and the Administrator of the Western Area Power Administration, Department of Energy, to further implement the RIP.

The Green River RMP (ROD signed October 1997) covered the discussion on depletions to the Colorado River system for the entire Rock Springs Field Office. The biological opinion received from USFWS dated July 12, 1994, waived the depletion fee for the Green River RMP because the average annual depletions were expected to be less than 100 acre-feet. This expectation was based on a previous biological opinion by the USFWS, which stated that the RIP was making sufficient progress (July 5, 1994). For this basin, all existing livestock watering facilities are identified and covered by the Green River RMP Biological Assessment/Biological Opinion because most, if not all, of the livestock watering impoundments addressed in this document would be a reconstruction of existing facilities.

The BLM retains discretionary authority over individual projects within the area for the purpose of endangered species consultation. If the recovery program is unable to implement the RIP in a timely manner or make sufficient progress in recovery of these endangered species, reinitiating of Section 7 consultation may be required so that new reasonable and prudent alternatives can be developed.

It is assumed that approximately 95 percent of the water used for gas drilling would be from the Colorado River drainage (i.e., 95 percent of the wells would be within this watershed). Depletions from oil and gas and coalbed gas well drilling processes would total approximately 368 acre-feet over the planning period

for the Colorado River drainage. The average annual depletion is expected to be 18 acre-feet. The depletion analysis for coalbed gas development only considers withdrawals for well drilling and completion. Dewatering for coalbed gas production will be evaluated during the site-specific analyses required for the Application for Permit to Drill process. Water withdrawn to dewater coal seams for coalbed gas production may or may not impact surface water flows, and any potential impacts to surface water will be addressed on a site-specific basis.

It is estimated that 23 livestock pits, ponds, and water wells may be created or rebuilt in the JMH CAP planning area. Average annual depletions that are anticipated by 19 livestock water developments in this basin would not exceed 4.75 acre-feet after all are installed. The total average annual depletion expected under these assumptions is approximately 23 acre-feet.

Table A3-1. Water Use in the Colorado River Drainage

Action	Number	Water Use per Action (acre-feet)	Total Water Use (acre-feet)	Project Lifespan (years)	Average Annual Depletion (acre-feet)
Oil and Gas Drilling [a]	245	1.5	367.5	20	18.4
Livestock Water Impoundments [b]	19	5	95	20	4.75
Total	264	6.5	463	20	23.15

[a] Oil and gas wells would be drilled during the non-winter months (approximately May–November), but exceptions could be granted. Industry estimates for this area for water needed for drilling and completion of wells. See Appendix 13 for reasonably foreseeable development assumptions.

[b] Water depletion from livestock impoundments is based on the following assumptions: (1) all are installed in year one of the 20 year planning period, (2) ponds average one-quarter acre in surface area, (3) evaporation rate from surface water equals the summertime peak rate of one-quarter inch per day, and (4) water would remain in the pond for 48 days. Resultant calculations yield a depletion of 0.25 acre-feet per pond per year or 5 acre-feet per pond for the 20-year planning period.

No other water depletions for the planning area are anticipated at this time. It is assumed that water used for hydrostatic testing of gas pipelines results in a "no net loss" to the associated basin because the water used is released back into the same basin. This assumes that if water were taken directly from surface flows it would be released back into surface waters at or below the point of diversion. Any variations from these assumptions would be analyzed on a site-specific basis.

Determinations: May affect, likely to adversely affect the four endangered Colorado River fishes and their critical habitat

Minimization Measures: Water depletion would occur within the Colorado River Basin. Formal consultation will occur with the USFWS. Minimization measures will be determined through consultation with USFWS.

Platte River Species

Seven species in the Platte River system are federally listed as threatened or endangered. They are the endangered whooping crane (*Grus americana*), endangered interior population of least tern (*Sterna antillarum*), threatened piping plover (*Charadrius melodus*), endangered pallid sturgeon (*Scaphirhynchus albus*), threatened bald eagle (*Haliaeetus leucocephalus*), endangered Eskimo curlew (*Numenius borealis*), and the threatened western prairie fringed orchid (*Platanthera praeclara*). Though they currently exist only downstream from the planning area, water from the Sweetwater River affects the

downstream habitat for these species. Any water depletions from this tributary water of the Platte River are considered to negatively affect these species or their habitat.

Under the *Revised Intra-Service Section 7 Consultation for Federal Agency Actions Resulting in Minor Water Depletions to the Platte River System,* March 2002, individual federal actions that result in annual water depletions of 25 acre-feet or less to the Platte River system are considered as "may adversely affect, but are not likely to jeopardize the continued existence of the whooping crane, interior population of least tern, piping plover, and pallid sturgeon, Eskimo curlew, western prairie fringed orchid, or the bald eagle" (USDI 2002).

It is assumed that less than five percent of the water to be used for oil and gas drilling processes is part of the Platte River system. This is because of the small amount of area within the planning area that drains into the Platte River. Depletions resulting from drilling operations for oil and gas wells would total approximately 15 acre-feet over the planning period for the Platte River system. The average annual depletion from drilling activities is anticipated to be 0.75 acre-feet.

For this basin, all existing livestock water developments are identified and covered by the *Programmatic Biological Assessment for Minor Water Depletions Associated with Reissuing of BLM Grazing Leases in the Platte River Basin,* July 1, 1999. Most, if not all, water developments addressed in this document would be a reconstruction of existing facilities. Livestock water development average annual depletions would not exceed 1 acre-foot after all are installed.

Table A3-2. Water Use in the Platte River Drainage

Action	Number	Water Use Per Action (acre-feet)	Total Water Use (acre-feet)	Project Lifespan (years)	Average Annual Depletion (acre-feet)
Oil and Gas Drilling [a]	10	1.5	15	20	0.75
Livestock Water Impoundments [b]	4	5	20	20	1
Total	14	6.5	35	20	1.75

[a] Oil and gas wells would be drilled during the non-winter months (approximately May–November,) but exceptions could be granted. Industry estimates for this area for water needed for drilling and completion of wells. See Appendix 13 for reasonably foreseeable development assumptions.

[b] Water depletion from livestock impoundments is based on the following assumptions: (1) all are installed in year one of the 20 year planning period, (2) ponds average one-quarter acre in surface area, (3) evaporation rate from surface water equals the summertime peak rate of one-quarter inch per day, (4) water would remain in the pond for 48 days. Resultant calculations yield a depletion of 0.25 acre-feet per pond per year or 5 acre-feet per pond for the 20-year planning period.

No other water depletions for the planning area are anticipated at this time. It is assumed that water used for hydrostatic testing of gas pipelines results in a "no net loss" to the associated basin because the water used is released back into the same basin. This assumes that if water were taken directly from surface flows it would be released back into surface waters at or below the point of diversion. Any variations from these assumptions would be analyzed on a site-specific basis.

Determinations: May affect, likely to adversely affect the continued existence of the species (interior population of least tern, piping plover, pallid sturgeon, whooping crane, piping plover, Eskimo curlew, western prairie fringed orchid, and bald eagle); may affect, likely to adversely affect critical habitat for whooping crane and piping plover

Minimization Measures: Water depletion would occur within the Platte River Basin. Formal consultation will occur with the USFWS to determine what measures would be required to minimize impacts to the above species and their habitats.

INTERRELATED AND INTERDEPENDENT ACTIONS

BLM has the discretionary authority to authorize actions on public lands (50 CFR §402.02) for development activities. As defined by the Federal Land Policy and Management Act of 1976 (FLPMA), "public lands" are those federally owned lands, and any interest in lands (e.g., federally owned mineral estate), that are administered by BLM. Within the planning area, there are varied and intermingled land surface ownerships and overlapping mineral ownerships. Therefore, the administrative jurisdictions for land use planning and for managing the land surface and minerals are also varied, intermingled, and overlapping. Because of this situation, the completed JMH CAP will not include planning and management decisions for lands or minerals that are privately owned or owned by the State of Wyoming or local governments. Providing direction for the surface or minerals management of these lands is not within BLM's jurisdiction. However, because Section 7 of the ESA and the requirements of 50 CFR §402 apply to all actions in which there is discretionary federal involvement or control, actions that the BLM authorizes, such as easements, leases, or permits, may interdependently affect ESA species on nonfederal lands. If a species protected under the Endangered Species Act is suspected of occurring on nonfederal lands and may be affected by an action on the nonfederal lands and that action would not occur but for the granting of an action on the federal lands (i.e., right-of-way), then consultation under Section 7 of the Endangered Species Act must be conducted for both the federal and nonfederal lands.

Potential impacts to ESA species could occur from BLM granting access to state and/or private lands through designation of easements and/or rights-of-way across public land. However, BLM has the jurisdiction to disallow a right-of-way and/or easement if the action is likely to facilitate jeopardizing a listed species on private lands.

Less than 10 percent (47,540 acres) of the planning area is state, private, or federal land outside of BLM's jurisdiction. Under the Proposed JMH CAP, a portion of the planning area will be closed to mineral leasing and development (Map 54). The remaining portion of the planning area will be open to mineral leasing and development with mitigation applied as appropriate. Impacts to threatened and endangered species could occur on state and private lands as a result of closing a portion of the planning area to the new leasing because those lands may be open to development. However, impacts are expected to be minimal because the amount of state and private land in the planning area is small and the land is dispersed throughout.

SPECIES NO LONGER ADDRESSED

Mountain Plover (*Charadrius montanus*)

Federal Status: None

State Classification: Imperiled (Not of significant concern)

Critical Habitat: No Recovery Plan: No

The USFWS determined that the mountain plover does not warrant listing under the ESA and therefore will not be addressed further in this document. In accordance with BLM guidance, the mountain plover will initially be addresses as a "Wyoming BLM Sensitive Species."

Whooping Crane *(Grus americana)*

Federal Status: Extirpated (Western Wyoming) State Status: None

Critical Habitat: Yes Recovery Plan: Yes

In 2001, the last bird in the Gray's Lake flock died, and the whooping crane population in western Wyoming is now considered extirpated; therefore, the whooping crane will not be considered further in this document.

REFERENCES

Baldwin, P. H. 1971. Diet of the Mountain Plover at the Pawnee National Grassland, 1970–71. Tech. Report 134. *Grassland Biome,* U.S. International Biological Program.

Ballard, W. B., J. S. Whitman, and C. L. Gardner. 1987. "Ecology of an Exploited Wolf Population in South-Central Alaska." *Wildlife Monogr.* No. 98. 54 pp.

Bangs, E. E., S. H. Fritts, J. A. Fontaine, D. W. Smith, K. M. Murphy, C. M. Mack, and C. C. Niemeyer. 1998. "Status of Gray Wolf Restoration in Montana, Idaho, and Wyoming." *Wildlife Society Bulletin* 26(4): 785–798.

Beauvais, G. P., and R. Smith. 1999. *Occurrence of Breeding Mountain Plovers (Charadrius montanus) in the Wyoming Basins Ecoregion.* Prepared by the Wyoming Natural Diversity Database for the USDI Bureau of Land Management, Rock Springs, Wyoming.

Center for Biological Diversity. January 21, 2001. Natural History of the Western Yellow-billed Cuckoo. Available from: http://www.biologicaldiversity.org/swcbd/species/cuckoo/natural history.html.

Craighead, F. C., Jr. (1976). "Grizzly Bear Ranges and Movement As Determined by Radio-Tracking." *Bears—Their Biology and Management.* (M. Pelton, J. W. Lentfer, & G. E. Folk, eds.) IUCN, Morges, Switzerland, New Series Publication 40, pp. 97–109.

Dorn, Robert D. 1986. *The Wyoming Landscape, 1805–1878.* Mountain West Publishing. pp. 46–55.

Fertig, W., and G. Beauvais. 1999. Wyoming Plant and Animal Species of Special Concern. Unpublished Report. Wyoming Natural Diversity Database, Laramie, Wyoming.

Fertig, Walter. 2000. *Status of Blowout Penstemon* (Penstemon haydenii) *in Wyoming.* Prepared by the Wyoming Natural Diversity Database for the Wyoming Cooperative Fish and Wildlife Research Unit, U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department.

Fritts, S. H., and L. D. Mech. 1981. Dynamics, Movements, and Feeding Ecology of a Newly Protected Wolf Population in Northwestern Minnesota. *Wildlife Monogr.* No. 80. 79 pp.

Fuller, T. K. 1989. Population Dynamics of Wolves in North-Central Minnesota. *Wildlife Monographs* No. 105. 41pp.

Herrero, S. 1978. A comparison of some features of the evolution, ecology and behavior of black and grizzly/brown bears. *Carnivore* 1(1): 7-17.

Hughes, J. M. 1999. "Yellow-billed Cuckoo (*Coccyzus americanus*)." *The Birds of North America*, No. 418. (A. Poole and F. Gill, eds.). Philadelphia: The Birds of North America, Inc.

Interagency Conservation Strategy Team (ICST). 2003. *Final Conservation Strategy for the Grizzly Bear in the Yellowstone Ecosystem.*

Jonkel, C., and Cowan I. McT. 1971. The black bear in the spruce fir forest. *Wildlife Monogr.* 27, 57pp.

Laymon, Stephen A., and Mary Halterman. 1987. "Can the Western Subspecies of the Yellow-billed Cuckoo Be Saved from Extinction?" *Western Birds*. V. 18. pp. 19–25.

Mattson, D. J., B. M. Blanchard, and R. R. Knight. 1991. Food habits of Yellowstone grizzly bears, 1977-1987. *Canadian Journal of Zoology.* 69:1619-1629.

Mattson, David, R. Wright, K. Kendall, and C. Martinka. 2003. Grizzly Bears. National Biological Service. http://biology.usgs.gov/s+t/noframe/c032.htm.

Moody, D., D. Hammer, M. Bruscino, D. Bjornlie, R. Grogan, and B. Debolt. 2002. Wyoming grizzly bear management plan. Wyoming Game and Fish Department. Cheyenne, WY. 48pp.

Moseley, R. K. 1998. "Ute Ladies-tresses (*Spiranthes diluvialis*) in Idaho: 1997 Status Report." Report prepared by the Idaho Conservation Data Center, Boise, ID.

Parrish, T. L., S.H. Anderson, and W.F. Oelklaus. 1993. "Mountain Plover Habitat Selection in the Powder River Basin, Wyoming." *Prairie Naturalist* 25: 219-226.

Ream, R.R., and U.I. Mattson. 1982. Wolf status in the northern Rockies. Pages 362-381 *in* F.H. Harrington and P.C. Paquet, eds. *Wolves of the World.* Noyes Publishing, Park Ridge, NJ.

Ream, R.R., M.W. Fairchild, D.K. Boyd, and A.J. Blakesley. 1989. First wolf den in western U.S. in recent history. *Northwestern Naturalist* 70:39-40.

Smith, D.W., and D.S. Guernsey. 2002. *Yellowstone Wolf Project: Annual Report, 2001.* National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming, YCR-NR-2002-04.

Stalmaster, M.V. 1987. *The Bald Eagle*. New York: Universe Books. 227 pp.

Steenhof, K. 1976. "The Ecology of Wintering Bald Eagles in Southeastern South Dakota." M.S. Thesis. University of Missouri. Columbia, Missouri.

Swisher, J.F. 1964. "A Roosting Area of the Bald Eagle in Northern Utah." *Wilson Bulletin* 76(2): 186–187.

USDI, Bureau of Land Management. 2001. "Opal Loop Natural Gas Pipeline and Compressor Station, Sublette, Sweetwater, and Lincoln Counties, Wyoming." Kemmerer and Rock Springs Field Office.

USDI, U.S. Fish and Wildlife Service. 1989. "Black-Footed Ferret Survey Guidelines for Compliance with the Endangered Species Act." USDI FWS. Denver, Colorado. 14 pp.

USDI, U.S. Fish and Wildlife Service. 1994. "The reintroduction of gray wolves to Yellowstone National Park and central Idaho; Final Environmental Impact Statement." Denver, Colorado.

USDI, U.S. Fish and Wildlife Service. 1995. "Ute Ladies-tresses (*Spiranthes diluvialis*) Recovery Plan." U.S. Fish and Wildlife Service, Denver, Colorado. 46 pp.

USDI, U.S. Fish and Wildlife Service. 1995a. "Endangered Species: Whooping Crane (*Grus Americana*)." Biologue Series.

USDI, U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. *Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.*

USDI, U.S. Fish and Wildlife Service. 1999. "U.S. Fish and Wildlife Service Announces Discovery of Endangered Plant, Blowout Penstemon, in Wyoming." News Release, Mountain-Prairie Region.

USDI U.S. Fish and Wildlife Service. February 17, 2000. "Service finds Yellow-billed Cuckoo May Require Endangered Species Act Protection." Available from: http://news.fws.gov/newsreleases.

USDI U.S. Fish and Wildlife Service. 2001. "Notice of 12-month Finding for a Petition to List the Yellow-billed Cuckoo in the Western Continental United States." Federal Register: July 25, 2001 (Volume 66, Number 143, Page 38611–38626). From the Federal Register online via GPO access [wais.access.gpo.gov].

USDI U.S. Fish and Wildlife Service, Nez Perce Tribe, National Park Service, and USDA Wildlife Services 2002. Rocky Mountain Wolf Recovery 2001 Annual Report. USFWS, Helena, MT. 35pp.

USDI U.S. Fish and Wildlife Service 2003. Grizzly Bear Recovery Plan. Missoula, Montana 181pp.

WGFD 2001. Grizzly Bear Mortalities in Wyoming.

WGFD 2003. Final Wyoming Gray Wolf Management Plan. July.

WYNDD 2002. "Yellow-Billed Cuckoo (*Coccyzus americanus*)." University of Wyoming.

APPENDIX 4—PROCEDURES FOR PROCESSING PROPOSALS FOR LAND USE AUTHORIZATIONS IN AREAS OF SEASONAL RESTRICTION

Upon receipt of an application, the project location is reviewed against the Green River Resource Management Plan (Green River RMP) to determine conformance with the plan and to identify existing resource concerns. Existing National Environmental Policy Act (NEPA) documents relevant to the proposal are gathered to determine whether they are adequate. If existing documents are adequate, a Documentation of Land Use Plan Conformance and NEPA Adequacy (DNA) is prepared (see Instruction Memorandum WO. 2001-062). If documents are deficient or nonexistent, NEPA documentation is prepared as needed using the appropriate format (see BLM NEPA Handbook, H-1790-1). A decision on the application is then issued, consistent with NEPA documentation, as appropriate.

Note: In seasonally crucial wildlife habitat, an approved Application for Permit to Drill (APD) will generally include a seasonal condition of approval (COA) because (1) the APD is valid for 1 year from date of issuance, and Bureau of Land Management (BLM) does not control the startup date for project activity; and (2) field conditions during the crucial period cannot be predicted at the time of APD approval.

If a seasonally restrictive COA is needed because a lease contains no such stipulation, the decision whether to impose the restriction must also consider the reasonableness of the restriction relative to the operator's ability to exercise the benefits of the lease (43 CFR 3101.1-2). The need for a COA must be documented in a site-specific analysis if necessary. This analysis must provide clear and convincing evidence showing that undue and unnecessary degradation would result if the COA were not applied.

PROCEDURES FOR HANDLING REQUESTS FOR EXCEPTION FROM SEASONAL STIPULATIONS AND/OR CONDITIONS OF APPROVAL

A request for exception must be initiated in writing by the operator. When requested concurrently with an application (typical for situations involving lease stipulations), the exception is considered as part of the project proposal in RMP and NEPA compliance review. For separate requests, the request is considered as a unique action and is analyzed and documented individually for RMP and NEPA compliance. In both cases, processing includes coordination with the Wyoming Game and Fish Department (WGFD) for seasonal wildlife-based lease stipulations or permit COAs.

The unpredictability of such factors as weather, and animal movement and condition, precludes analysis of requests related to wildlife far in advance of the time periods in question. Analyses of requests include review of potential mitigation measures and alternatives (traffic restrictions, alternative scheduling, staged activity, etc.). These procedures will be utilized for any request for exception for a surface disturbing or disruptive activity.

The final determination for granting an exception to wildlife stipulations will be a decision by BLM after consultation with WGFD.

CRITERIA FOR CONSIDERING EXCEPTIONS TO SEASONALLY RESTRICTED ACTIVITY

Currently, land use activities within the Rock Springs Field Office Area may be authorized with seasonal restriction(s), No Surface Occupancy requirement, or a distance restriction for sensitive and crucial habitats. Stipulations were developed to provide protection of natural resources. Protective wildlife seasonal stipulations are developed consistent with statewide dates. For example, big game crucial winter ranges are

protected from November 15 to April 30. This restriction is not intended to close an area to development but is in place to protect big game if weather or other habitat needs dictate that closure is necessary.

Over the past few years, the public has received the impression that crucial winter ranges are off limits to any activity. This is true only when conditions dictate. The BLM can and does grant exceptions to seasonal restrictions if the wildlife biologist, in consultation with WGFD, believes that granting an exception will not jeopardize the population being protected. Wildlife biologists use a set of criteria when considering a request for an exception. Professional judgment plays a key role in the BLM biologist's recommendation to the Field Manager to grant or not grant exception(s). There is no clear-cut formula.

Approximately 60 percent of the federal land acres (349,250 acres) in the planning area have no wildlife restrictions. Following are some of the factors considered by the wildlife biologist in determining whether a request for exception should be granted.

Big Game Winter Ranges

The criteria used for crucial big game winter range are that those areas are available; relatively intact; and winter most of the population at its objective, in adequate body condition, 8 or more years out of 10. The most crucial time period for these animals is usually from January 1 to March 15, and this is when the stipulation dates are generally enforced. However, the remaining time frames for the standard statewide stipulation allows the authorizing officer the option of enforcing a longer seasonal restriction if winter conditions warrant.

General Considerations Regarding a Request for Exception

- Are the factors leading to the inclusion of the wildlife seasonal restriction still valid?
- Is the request for an exception from a lease stipulation or is it for relief from a COA on an application?
- What are the dates for the proposed exception/relief?

Criteria to Consider for Granting Exceptions on Winter Ranges

- Animal presence or absence
- Animal condition
- Weather severity
  - a. Snow conditions (depth, crusting, longevity)
  - b. Seasonal weather patterns
  - c. Wind chill factors (indication of animals' energy use)
  - d. Air temperatures and variation
  - e. Duration of condition
  - f. Forecasts (long range for duration of winter)

- Habitat condition and availability
  - a. Animal density (high or low)
  - b. Forage condition (good or poor)
  - c. Competition (livestock and other wildlife)
  - d. Forage availability
    - Amount of forage
    - Snow depth
  - e. Whether livestock use has decreased available winter forage

f. Whether or not there is suitable and ample forage immediately available and accessible nearby that is not being used

- Site location
  a. Likelihood of animals habituating to activity
  b. Presence of thermal cover, wind cover, and other such factors
  c. Proportion of winter range affected
  d. Location of site within the winter range
  e. Whether there is other activity in the area and whether it is likely to increase the cumulative adverse impact

- Timing
  a. Early in winter season
  b. Nearing end of winter season
  c. The kind and duration of disruptive activity expected
  d. How much remains of the winter when the activity is likely to occur.

General Considerations for Granting Exceptions to Stipulations

Elk

Short-term exceptions are more likely to be considered early (November 15–December 1) and late (April 1–April 30) in the winter season, depending on weather conditions and animal occupancy. Exceptions would not be granted if requested from December 1 to March 1 unless unusually mild winter conditions prevail. Exceptions in elk calving area dates (May 1–June 30) will not be granted because of elk sensitivity to disturbance. Displacement in open habitats is much greater than in woodlots or forests, hence restricted areas will encompass larger areas in open habitat.

Moose

Exceptions will depend on weather conditions and presence of animals. Moose habitat is given protection through riparian and stream buffer zone stipulations (500 feet from live water and riparian habitats).

Antelope

Exceptions will generally be granted except where physical barriers (highways, fences, rivers, canyons, etc.) limit the animals' ability to move into other suitable habitats. In the case of developing oil and gas fields with proposed intensive or disruptive disturbances, BLM and WGFD coordination will be required to ensure that cumulative disturbance and/or range competition with other big game and livestock will not affect herd unit objectives. Exceptions to restrictions will be closely watched during severe winters, when antelope movement is restricted.

Deer

Short-term exceptions may be granted early (November 15–December 1) and late (April 1–April 30), depending on weather conditions and animal occupancy, using the previously discussed criteria. Exceptions can be granted for north slopes, deep snow areas, or other habitats within crucial ranges that preclude use by wintering deer and in which access roads are determined to have little adverse impact.

Raptors

The "no surface occupancy" stipulation of February 1 to July 31 for raptor nests can be shortened depending on the nesting chronology of individual species, nest site location, and topography. Inactive nests can be excepted, as may certain types of short-term, minor disruption land use activities that are not anticipated to affect nesting success.

Greater Sage-Grouse

A "controlled surface use" stipulation will be applied to a one-quarter-mile radius of active greater sage-grouse strutting grounds, including no aboveground facilities (power lines, storage tanks, fences, etc.). Linear disturbances, such as low-traffic roads, pipelines, and seismic activity, could be granted exceptions. From March 1 through May 15, activities would avoid the area within a one-quarter-mile radius of active strutting grounds, from 8 p.m. to 8 a.m. daily. The actual timing of this stipulation can be modified depending on weather conditions, such as fog and cloudy conditions or clear, bright moonlit nights. Seasonal restrictions would be applied from May 15 through July 15 within greater sage-grouse nesting and brood-rearing habitat to protect nesting greater sage-grouse and nesting habitat. Areas not used for nesting can be excepted, provided that actual nesting areas are not affected. Disruptive activities would be prohibited in greater sage-grouse winter range, usually from November 15 through March 15. Exceptions can be granted in winter ranges depending on weather conditions, occupancy by the birds, or conditions that preclude occupancy by the birds.

Other

Other seasonal restrictions for other species, such as mountain plover and greater sage-grouse winter concentrations, may be identified on a case-by-case basis. Should additional seasonal restrictions be identified, exceptions would also be handled on a case-by-case basis and include a site-specific analysis.

APPENDIX 5—WYOMING BUREAU OF LAND MANAGEMENT MITIGATION GUIDELINES FOR SURFACE DISTURBING AND DISRUPTIVE ACTIVITIES

INTRODUCTION

These guidelines are for the primary purpose of attaining statewide consistency in how requirements are determined for avoiding and mitigating environmental impacts and resource and land use conflicts. "Consistency" does not mean that identical requirements will be applied for all similar types of land use activities that might cause similar types of impacts, nor does it mean that the requirements or guidelines for a single land use activity will be identical in all areas.

The mitigation guidelines are used in two ways in the resource management plan (RMP) and environmental impact statement (EIS) process: (1) as part of the planning criteria in developing the RMP alternatives and (2) in the analytical processes of developing the alternatives and analyzing the impacts of the alternatives. In the first case, an assumption is made that any one or more of the mitigations will be appropriately included as conditions of relevant actions being proposed or considered in each alternative. In the second case, the mitigations are used to develop a baseline for measuring and comparing impacts among the alternatives to identify other actions and alternatives that should be considered, and to help determine whether more stringent or less stringent mitigations should be considered.

The EIS for the RMP does not decide or dictate the exact wording or inclusion of the mitigation guidelines. Rather, the guidelines are used in the RMP EIS process as a tool to help develop the RMP alternatives and to provide a baseline for comparative impact analysis in arriving at RMP decisions. The guidelines will be used in the same manner in analyzing activity plans and other site-specific proposals. The mitigation guidelines and their wording are matters of policy. As such, specific wording is subject to change primarily through administrative review, not through the RMP EIS process. Any further changes that may be made in the continuing refinement of these guidelines, and any development of program-specific standard stipulations, will be handled in another forum, including that which is conducive to appropriate public involvement and input.

PURPOSE

The purposes of the "Wyoming BLM Mitigation Guidelines" are (1) to reserve for the Bureau of Land Management (BLM) the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection and (2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. The guidelines have been written in a format that will allow for their direct use as stipulations and for the addition of specific or specialized mitigation following submission of a detailed plan of development or other project proposal, and an environmental analysis.

Those resource activities or programs currently without a standardized set of permit or operation stipulations can use the mitigation guidelines as stipulations or as conditions of approval, or as a baseline for developing specific stipulations for a given activity or program.

Because the use of the mitigation guidelines was integrated into the RMP EIS process and will be integrated into the site-specific environmental analysis process, the application of stipulations or mitigation requirements derived through the guidelines will provide more consistency with planning decisions and plan implementation than has occurred in the past. Application of the mitigation guidelines

to all surface and other human presence disturbance activities concerning BLM-administered public lands and resources will in turn provide more uniformity in mitigation than has occurred in the past.

SPECIFIC GUIDELINES FOR MITIGATION

1. Surface Disturbance Mitigation Guideline

Surface disturbance will be prohibited in any of the areas or conditions listed below. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis by the Authorized Officer.

a. Slopes in excess of 25 percent

b. Within important scenic areas (Class I and II visual resource management areas)

c. Within 500 feet of surface water and/or riparian areas

d. Within either one-quarter mile or the visual horizon (whichever is closer) of historic trails

e. When performing construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.

Guidance

The intent of the Surface Disturbance Mitigation Guideline is to inform interested parties (potential lessees, permittees, or operators) that when one or more of the five conditions (1a through 1e above) exist, surface disturbing activities will be prohibited unless or until a permittee or his or her designated representative and the surface management agency (SMA) arrive at an acceptable plan for mitigation of anticipated impacts. This negotiation will occur prior to development.

Specific criteria (for example, 500 feet from water) have been established based on the best information available. However, such items as geographical areas and seasons must be delineated at the field level.

Exception, waiver, or modification of requirements developed through this guideline must be based on environmental analysis of proposals (for example, activity plans, plans of development, plans of operation, applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

2. Wildlife Mitigation Guideline

a. To protect important big game winter habitat, activities or surface use will not be allowed from November 15 to April 30 within certain areas encompassed by the authorization. The same criteria apply to defined big game birthing areas from May 1 to June 30.

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the Authorized Officer.

b. To protect important raptor and/or sage- and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 within certain

areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 to April 30.

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the Authorized Officer.

c. No activities or surface use will be allowed on that portion of the authorization area identified within [legal description] for the purpose of protecting habitat [for example, sage-grouse or sharp-tailed grouse breeding grounds, and/or other species or activities].

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the Authorized Officer.

d. Portions of the authorized use area legally described as [legal description] are known or suspected to be essential habitat for [name], which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and U.S. Fish and Wildlife Service guidelines to verify the presence or absence of this species. In the event that [name] occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat [for example, seasonal use restrictions, occupancy limitations, facility design modifications].

Guidance

The Wildlife Mitigation Guideline is intended to provide two basic types of protection: seasonal restriction (2a and 2b above) and prohibition of activities or surface use (2c above). Item 2d above is specific to situations involving threatened or endangered species. Legal descriptions will ultimately be required and should be measurable and legally definable. There are no minimum subdivision requirements at this time. The area delineated can and should be defined as necessary, based on current biological data, prior to the time of processing of an application and the issuance of the use authorization. The legal description must eventually become a part of the condition for approval of the permit, plan of development, and/or other use authorization.

The seasonal restriction section identifies three example groups of species and delineates three similar time frame restrictions. The big game species, including elk, moose, deer, antelope, and bighorn sheep, all require protection of crucial winter range between November 15 and April 30. Elk and bighorn sheep also require protection from disturbance from May 1 to June 30, when they typically occupy distinct calving and lambing areas. Raptors include eagles, accipiters, falcons (peregrine, prairie, and merlin), buteos (ferruginous and Swainson's hawks), osprey, and burrowing owls. The raptors and sage- and sharp-tailed grouse require nesting protection between February 1 and July 31. The same birds often require protection from disturbance from November 15 through April 30 while they occupy winter concentration areas.

Item 2c, prohibition of activity or surface use, is intended for protection of specific wildlife habitat areas or values within the use area that cannot be protected using seasonal restrictions. These areas or values must be factors that limit life cycle activities (for example, sage-grouse strutting grounds, known threatened and endangered species habitat).

Exception, waiver, or modification of requirements developed from this guideline must be based on environmental analysis of proposals (for example, activity plans, plans of development, plans of operation, applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

3. Cultural Resource Mitigation Guideline

When a proposed discretionary land use has the potential for affecting characteristics that qualify a cultural property for the National Register of Historic Places (National Register), mitigation will be considered. In accordance with Section 106 of the Historic Preservation Act, procedures specified in 36 CFR 800 will be used in consultation with the Wyoming State Historic Preservation Officer for arriving at determinations concerning the need and type of mitigation to be required.

Guidance

The preferred strategy for treating potential adverse effects on cultural properties is "avoidance." If avoidance involves project relocation, the new project area also may require cultural resource inventory. If avoidance is imprudent or unfeasible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative measures.

Reports documenting results of cultural resource inventory, evaluation, and the establishment of mitigation alternatives (if necessary) shall be written according to standards contained in BLM manuals, cultural resource permit stipulations, and other policy issued by BLM. The reports must provide sufficient information for Section 106 consultation. Reports shall be reviewed for adequacy by the appropriate BLM cultural resource specialist. If cultural properties on, or eligible for, the National Register are located within these areas of potential impact and cannot be avoided, the Authorized Officer shall begin the Section 106 consultation process in accordance with the Wyoming Protocol to the National Programmatic Agreement.

Mitigation measures shall be implemented according to the mitigation plan approved by the BLM Authorized Officer. Such plans are usually prepared by the land use applicant according to BLM specifications. Mitigation plans will be reviewed as part of Section 106 consultation for National Register-eligible or listed properties. The extent and nature of recommended mitigation shall be commensurate with the significance of the cultural resource involved and the anticipated extent of damage. Reasonable costs for mitigation will be borne by the land use applicant. Mitigation must be cost-effective and realistic. It must consider project requirements and limitations, input from concerned parties, and be BLM approved or BLM formulated.

Mitigation of paleontological and natural history sites will be treated on a case-by-case basis. Factors such as site significance, economics, safety, and project urgency must be taken into account when making a decision to mitigate. Authority to protect (through mitigation) such values is provided for in the Federal Land Policy and Management Act (FLPMA), Section 102(a)(8). When avoidance is not possible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative protection measures.

4. Special Resource Mitigation Guideline

To protect [resource value], activities or surface use will not be allowed [within a specific distance of the resource value or between one date and another date] in [legal description].

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the Authorized Officer.

Example resource categories (select or identify category and specific resource value):

a. Recreation areas

b. Special natural history or paleontological features

c. Special management areas

d. Sections of major rivers

e. Prior existing rights-of-way

f. Occupied dwellings

g. Other (specify).

Guidance

The Special Resource Mitigation Guideline is intended for use only in site-specific situations where one of the first three general mitigation guidelines will not adequately address the concern. The resource value, location, and specific restrictions must be clearly identified. A detailed plan addressing specific mitigation and special restrictions will be required prior to disturbance or development and will become a condition for approval of the permit, plan of development, or other use authorization.

Exception, waiver, or modification of requirements developed from this guideline must be based on environmental analysis of proposals (for example, activity plans, plans of development, plans of operation, applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

5. No Surface Occupancy Guideline

No surface occupancy will be allowed on the following described lands [legal description] because of [resource value].

Example resource categories (select or identify category and specific resource value):

a. Recreation areas (for example campgrounds, historic trails, national monuments)

b. Major reservoirs/dams

c. Special management area (for example, known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation)

d. Other (specify).

Guidance

The No Surface Occupancy (NSO) Mitigation Guideline is intended for use only when other mitigation is determined insufficient to adequately protect the public interest and when it is the only alternative to "no

development" or "no leasing." The legal description and resource value of concern must be identified and must be tied to an NSO land use planning decision.

Waiver of or exception(s) to the NSO requirement will be subject to the same test used to initially justify the requirement's imposition. If, upon evaluation of a site-specific proposal, it is found that less restrictive mitigation would adequately protect the public interest or value of concern, then a waiver or exception to the NSO requirement is possible. The record must show that because conditions or uses have changed, less restrictive requirements will protect the public interest. An environmental analysis must be conducted and documented (for example, environmental assessment, EIS as necessary) to provide the basis for a waiver or exception to an NSO planning decision. Modification of the NSO requirement will pertain only to refinement or correction of the location(s) to which it applied. If the waiver, exception, or modification is found to be consistent with the intent of the planning decision, it may be granted. If found inconsistent with the intent of the planning decision, a plan amendment would be required before the waiver, exception, or modification could be granted.

When considering the "no development" or "no leasing" option, a rigorous test must be met and fully documented in the record. This test must be based on stringent standards described in the land use planning document. Because rejection of all development rights is more severe than the most restrictive mitigation requirement, the record must show that consideration was given to development subject to reasonable mitigation, including "no surface occupancy." The record must also show that other mitigation was determined to be insufficient to adequately protect the public interest. A "no development" or "no leasing" decision should not be made solely because it appears that conventional methods of development would be unfeasible, especially where an NSO restriction may be acceptable to a potential permittee. In such cases, the potential permittee should have the opportunity to decide whether or not to go ahead with the proposal (or accept the use authorization), recognizing that an NSO restriction is involved.

APPENDIX 6—STANDARD PRACTICES, BEST MANAGEMENT PRACTICES, AND GUIDELINES FOR SURFACE DISTURBING ACTIVITIES

This appendix describes the practices utilized to mitigate adverse effects caused by surface disturbing activities.

Standard practices applied to surface disturbing activities are statements of guidelines and techniques for establishing statewide (or national) consistency in avoiding and mitigating environmental impacts and resource conflicts. These practices have been developed through field experience, planning analyses, and legal or regulatory directives. They emphasize the responsibility of the Bureau of Land Management (BLM) to ensure that good construction practices are used on public lands, and that they apply to all surface disturbing activities.

Best management practices (BMP) are developed by state agencies in cooperation with federal agencies to control nonpoint sources of pollution. Section 303(e) of the Clean Water Act and 40 CFR 130.5 require states to maintain a "Water Quality Management Continuing Planning Process." The process must establish procedures for adoption and appeals that, among other items, address BMPs. BMPs are advisory rather than regulatory. They are a key element in a State Nonpoint Source Management Plan, with which the Federal Government must comply under Executive Orders 12088 and 12372 and Clean Water Act Sections 319(k) and 301(k). The standard practices in this document are designed to meet the intent of the state's BMPs and may therefore be subject to revision when the state BMPs are finalized.

The State of Wyoming has released draft lists of BMPs that address silviculture and hydrology, and the state has issued a policy statement in lieu of BMPs for minerals and oil and gas. The state has not yet released a draft of BMPs for grazing. Wyoming has adopted the policy that the rules and regulations promulgated for oil and gas exploration, mineral extraction, and underground storage tanks shall be considered as the BMPs for these activities.

The Wyoming BLM policy on reclamation assumes that an area can and shall be ultimately reclaimed, and requires that every surface disturbance on public lands receive attention for short-term stabilization and long-term reclamation. Mitigation measures reduce to the extent possible the amount of reclamation that ultimately must take place. BLM must apply reasonable mitigation and provide guidance for all authorizations. The permit or authorization is the means provided for ensuring that mitigation measures are implemented. Compliance inspections during operations ensure that Conditions of Approval (COA) and/or stipulations are being followed. Compliance inspections on completion of work ensure that both surface and subsurface reclamation procedures have been properly followed.

Standard practices may develop through the National Environmental Policy Act (NEPA) process into stipulations prior to lease or grant issuance, or they may serve as a basis for COAs. If these practices (or newly developed techniques) are already incorporated into plans for development submitted by a permittee, such plans may be approved without the addition of any COAs. BLM would consider any project proposal; however, the burden is on the applicant to describe the design and construction techniques. If a project's design, scheduling, and construction techniques can mitigate environmental concerns, construction may be allowed without any COAs.

STANDARD PRACTICES

The following are standard practices applied to surface disturbing activities. These practices are applied, when necessary, to reduce environmental impacts. Large projects may require construction use plans

and/or erosion control, revegetation, and restoration plans (Appendix 5-3) that would incorporate these practices. The standard practices in this document are designed to meet the intent of the state's BMPs and may therefore be subject to revision when the state of the Green River Resource Management Plan (RMP) BMPs are finalized.

Although the paragraphs below address specific resources or types of development, the practices apply to all surface disturbing activities. These practices have been developed through experience working with surface disturbances in the Rock Springs Field Office. Therefore, these practices are believed to be the best practices available to address a variety of surface disturbance problems. These practices are not stipulations but represent concerns that must be addressed in any acceptable proposed surface disturbing activity. Operators are encouraged to review these practices, incorporate them where appropriate, and where possible develop better methods for achieving the same goals.

Air Quality

BLM actions must comply with all applicable air quality laws, regulations, and standards. As projects are proposed that include possible major sources of air pollutant emissions, air quality protection-related stipulations are added to BLM permits and right-of-way grants. In addition, BLM coordinates with the Wyoming Department of Environmental Quality, Air Quality Division (DEQ-AQD), during the process of analysis. This coordination results in technical review of applications for permits and/or identification of additional stipulations to be applied to these permits.

The release of hazardous air contaminants, particularly the emissions from sour natural gas sweetening plants (a process used to remove hydrogen sulfide [H_2S] from natural gas, resulting in the emission of sulfur dioxide), is a public concern. BLM requires industry to prepare analyses of risks involved in the development of sour gas pipelines and treatment facilities. These analyses are designed to project impacts both on the public and on resource values. To aid in achieving air quality goals, BLM would consult with the State of Wyoming, the U.S. Forest Service, industry, and the public to ensure that the most technically sound, environmentally balanced, and economically feasible decisions are made.

Additional Stipulations: The emission of fugitive dust shall be limited by all persons handling, transporting, or storing any material, to prevent unnecessary amounts of particulate matter from becoming airborne to the extent that ambient air standards described in these regulations are exceeded. Control measures, described as follows, or any equivalent method shall be considered appropriate for such control:

1. Where possible, use water or chemicals to control dust in the demolition of existing buildings or structures, and in construction operations, grading of roads, or clearing of land.
2. Apply asphalt, oil, water, or suitable chemicals to dirt roads, materials stockpiles, and other surfaces that can give rise to airborne dusts.
3. Install and use hood filters, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.
4. At all times when these trucks are in motion, cover open-bodied trucks used in transporting materials likely to give rise to airborne dust.
5. Conduct agricultural practices, such as tilling of land and application of fertilizers, in such a manner as to prevent dust from becoming airborne.
6. Pave and maintain roadways in a clean condition.

7. Promptly remove from paved streets earth or other material that has been transported by trucking or earthmoving equipment, by erosion by water, or by other means (Wyoming Air Quality Standards and Regulations, 1989, Section 14, Control of Particulate Emissions).

Based on improved modeling; reductions in nitrogen oxide (NO_x) emissions at the Naughton Power Plant near Kemmerer; and the timing, duration, and magnitude of visibility impacts from the projected wells and compression, the cumulative effects of NO_x emissions (as modeled for the Pinedale Anticline Project Environmental Impact Statement [EIS]) will remain within acceptable levels for visibility and lake acidity. Monitoring and emissions tracking for the protection of wilderness air quality-related values of visibility and lake acidification will continue, and reporting will be performed on an annual basis.

Wyoming DEQ-AQD emissions tracking will continue on an annual basis to report changes in permitted potential NO_x emission levels since January 1, 1996. In accordance with the Joint Agreement between BLM, Wyoming DEQ, U.S. Department of Agriculture (USDA) Forest Service, and the Environmental Protection Agency (EPA) for maintaining diligence in monitoring for the protection of wilderness air quality-related values of visibility and lake acidification, BLM, in consultation with the Wyoming DEQ-AQD, will track emissions for the Pinedale Anticline and the Jonah II projects on an annual basis. Any development within the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) area also will be included in the tracking because of its proximity to the Bridger Wilderness area.

The construction and installation of compressors on BLM-administered lands will be coordinated with the Wyoming DEQ-AQD and all the operators. Before right-of-way grants or sundry notices will be issued for any compressor site on BLM-administered lands, additional site-specific environmental analysis will be required to address site-specific surface resource concerns and mitigation of unnecessary and undue impacts (e.g., cultural, wildlife, visual, noise impacts at dwellings, sage-grouse leks, etc.). Sites that are less than 4 miles from a dwelling will require additional hazardous air pollutant analysis.

Candidate Plants

Mitigation options to avoid or reduce impacts on rare plants may be limited because of specific habitat requirements or lack of necessary biological information to make such an assessment. Most of the common techniques, such as offsite compensation or habitat restoration, have proved largely unsuccessful, although seedbanking is commonly performed to attempt offsite propagation. Mitigation plans for areas where impacts on these species cannot be avoided are designed to provide special management actions that minimize the overall impact on the species. However, because of the difficulties of providing successful mitigation options, impacts on candidate plants are considered less than significant only if no net loss of population size or habitat quality results. "No net loss" is intended to mean that BLM must "ensure that [actions authorized, funded, or carried out by BLM]...affecting the habitat of candidate species are carried out in a manner that is consistent with the objectives for managing those species. BLM shall not carry out any actions that would cause any irreversible or irretrievable commitment of resources or reduce the future management options for the species involved" (BLM Manual 6840).

Fire

Guidelines for buffer areas (an area in which fire cannot spread) have been prepared to protect developed facilities and areas of highly erodible soils from the impacts of fire.

If the development is located in a grass community, a 15-foot buffer is recommended.

If the development is located in a sagebrush community, a 25-foot buffer is recommended.

In a juniper/tall brush community (serviceberry, aspen, cottonwood, willow), a 50-foot buffer is recommended.

In a conifer community (lodgepole, spruce fir), a buffer area of 25 feet plus the height of the surrounding trees is recommended.

The emissions that may be created directly by BLM activities are mitigated by applying BMPs. For example, prescribed fires are conducted to reduce emissions by burning only at appropriate fuel moistures and wind speeds (among other factors), which reduce as much as possible the smoke created. All BLM activities that may potentially cause undesirable air quality impacts are also coordinated with the Wyoming DEQ-AQD. Permits to conduct these activities are secured (where necessary) before the activity begins, to ensure compliance with all federal, state, and local air quality laws.

In support of prescribed fire activities, BLM may temporarily close areas to facilitate operations and to provide for public safety.

Pipelines and Communication Lines

On ditches exceeding 36 inches in width, 6 to 12 inches of surface soil should be salvaged where possible on the entire right-of-way. When pipelines and communication lines are buried, there should be at least 30 inches of backfill on top of the pipe. Backfill should not extend above the original ground level after the fill has settled. Guides for construction and water bar placement are found in "Surface Operating Standards for Oil and Gas Exploration and Development" (USDI 1978). Bladed surface materials would be respread on the cleared route once construction is completed. Disturbed areas that have been reclaimed may need to be fenced when the route is near livestock watering areas.

Existing crowned and ditched roads would be used for access where possible to minimize surface disturbances. Where possible, clearing of pipeline and communication line rights-of-way would be accomplished with the least degree of disturbance to topsoil. Where topsoil removal is necessary, it would be stockpiled (wind-rowed) and respread over the disturbance after construction and backfilling are completed. Vegetation removed from the right-of-way would also be required to be respread to provide protection, nutrient recycling, and a seed source.

To promote soil stability, the compaction of backfill over the trench would be required (not to extend above the original ground level after the fill has settled). Water bars, mulching, and terracing would be required as needed to minimize erosion. Instream protection structures (e.g., drop structures) may be required in drainages crossed by a pipeline to prevent erosion. The fencing of linear disturbances near livestock watering areas may be required.

Reclamation

Current BLM policy recognizes that there may be more than one correct way to achieve successful reclamation, and a variety of methods may be appropriate to the varying circumstances. BLM should continue to allow applicants to use their own expertise in recommending and implementing construction and reclamation projects. These allowances still hold the applicant responsible for final reclamation standards of performance.

BLM reclamation goals emphasize (1) protection of existing native vegetation, (2) minimal disturbance of existing environment, (3) soil stabilization through establishment of ground cover, and (4) establishment of native vegetation consistent with land use planning.

All reclamation is expected to be accomplished as soon as possible after the disturbance occurs, with efforts continuing until a satisfactory revegetation cover is established and the site is stabilized (3 to 5 years).

Only areas needed for construction would be allowed to be disturbed. Reclamation (by the lessee or grant holder) would be initiated as soon as possible after a disturbance occurs.

On all areas to be reclaimed, seed mixtures would be required to be site-specific, composed of native species, and would be required to include species promoting soil stability. A predisturbance species composition list must be developed for each site if the project encompasses an area where there are several different plant communities present. Livestock palatability and wildlife habitat needs would be given consideration in seed mix formulation. BLM guidance for native seed use is BLM Manual 1745 (Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants), and Executive Order 13112 (Invasive Species).

Interseeding, secondary seeding, or staggered seeding may be required to accomplish revegetation objectives. During rehabilitation of areas in important wildlife habitat, provision would be made for the establishment of native browse and forb species, if determined to be beneficial for the habitat affected. Follow-up seeding or corrective erosion control measures may be required on areas of surface disturbance which experience reclamation failure.

Trees, shrubs, and ground cover (not to be cleared from rights-of-way) would require protection from construction damage. Backfilling to preconstruction condition (in a similar sequence and density) would be required. Restoration of normal surface drainage would also be required.

Any mulch used would be free from mold, fungi, or noxious weed seeds. Mulch may include native hay, small grain straw, wood fiber, live mulch, cotton, jute, synthetic netting, and rock. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover.

The grantee or lessee would be responsible for the control of all noxious weed infestations on surface disturbances. Aerial application of chemicals would be prohibited within one-quarter mile of special status plant locations, and hand application would be prohibited within 500 feet. Control measures would adhere to those allowed in the Rock Springs District Noxious Weed Control Environmental Assessment (EA) (USDI 1982a) or the Regional Northwest Area Noxious Weed Control Program EIS (USDI 1987). Herbicide application would be monitored by the BLM Authorized Officer.

Roads

Roads would be constructed as described in BLM Manual 9113. New main artery roads would be designed to reduce sediment, salt, and phosphate loading to the Green River. Where necessary, running surfaces of the roads would be graveled if the base does not already contain sufficient aggregate.

Existing roads would be upgraded where necessary.

Recognized roads, as shown on the Rock Springs District Office Transportation Plan, would be used when the alignment is acceptable for the proposed use. Generally roads would be required to follow

natural contours, to provide visual screening by constructing curves and by other means, and to be reclaimed to BLM standards.

To control or reduce sediment from roads, guidance involving proper road placement and buffer strips to stream channels; graveling; proper drainage; seasonal closure; and in some cases, redesign or closure of old roads, would be developed when necessary. Construction may also be prohibited during periods when soil material is saturated or frozen, or when watershed damage is likely to occur.

On newly constructed roads and permanent roads, the placement of topsoil, seeding, and stabilization would be required on all cut and fill slopes unless conditions (e.g., rock) prohibit it. No unnecessary sidecasting of material (e.g., maintenance) on steep slopes would be allowed. Snow removal plans may be required so that snow removal does not adversely affect reclamation efforts or resources adjacent to the road.

Reclamation of abandoned roads would include requirements for reshaping, recontouring, resurfacing with topsoil, installing water bars, and seeding on the contour. The removal of structures such as bridges, culverts, cattleguards, and signs usually would be required. Stripped vegetation would be spread over the disturbance for nutrient recycling where practical. Fertilization or fencing of these disturbances would not normally be required. Additional erosion control measures (e.g., fiber matting) and road barriers to discourage travel may be required.

Main artery roads, regardless of primary user, would be crowned, ditched, drained, and surfaced with gravel to reduce sediment, salt, and phosphate loading to the Green River.

Road closures may be implemented during crucial periods (e.g., wildlife winter periods, spring runoff, and calving and fawning seasons).

Soils

If clay soils are used as pit lining, they should have a liquid limit greater than 30 and a Plasticity Index of at least 20. Assuming that bentonite in drilling fluids would sufficiently seal a pit is not good procedure, because the bentonite would not be compacted, and uniform coverage and density would not be achieved. Bentonite is also subject to cracking if it is not designed properly.

Uncontrolled or designed settlement of clay particles does not provide a consistently adequate seal on a pit liner. Compaction or permeability testing should be used to determine pit characteristics.

Current objectives focus on soil conservation planning for surface disturbance actions. Soil conservation should be addressed during the initial phase of any surface disturbing action, thereby maintaining soil productivity and stability levels through the use of existing guidelines and techniques. Some areas may require more thorough soil management practices than others; however, this is dependent on the type and duration of the action and the effect on site-specific soil characteristics.

Some examples of standards applied throughout the field office area based on soil management criteria are as follows:

1. Closures due to saturated soil conditions when soil resource damage would occur due to wheel rutting or compaction on wet soils
2. Salvage and subsequent replacement of topsoil whenever possible on surface disturbing activities

3. Limiting disturbance on slopes of greater than 25 percent.

Emphasis should continue to be placed on the reduction of soil erosion and sediment into the Green River Basin watershed. Of particular importance would be those areas with saline soils, such as the Killpecker Creek drainage, or those areas with highly erodible geology and soils.

Management of the soil resource would continue to be based on the following factors: (1) evaluation and interpretation of soils in relation to project design and development, (2) identification and inventory of soils for baseline data, and (3) identification and implementation of methods to reduce accelerated erosion.

Evaluation and interpretation involves identification of soil properties that would influence their use, and recommendations for development while minimizing soil loss. Projects would be examined on a site-specific basis, evaluating the potential for soil loss and the compatibility of soil properties with project design. Stipulations and mitigating measures are provided on a case-by-case basis to ensure soil conservation and practical management. Projects requiring soil interpretations include construction of linear right-of-way facilities (i.e., pipelines, roads, railroads, and power transmission lines); construction of water impoundments; rangeland manipulation through fire or mechanical treatments; construction of plant site facilities, pump stations, well pads, and associated disturbances; and reclamation projects.

The current Order 3 soil survey is designed to update general soils information and provide data to those areas lacking soil inventories. A baseline soil inventory is ongoing to provide information on productivity, soil engineering properties, and soil erosion potentials. Proposed "I" category allotments and areas impacted by oil and gas projects receive priority in the soil survey process.

Identification of critical erosion condition areas would continue during soil surveys, monitoring, site-specific project analysis, and activity plan development for the purpose of avoidance and special management.

Before a surface disturbing activity is authorized, topsoil depth would be determined. The amount of topsoil to be removed, along with topsoil placement areas, would be specified in the authorization. The uniform distribution of topsoil over the area to be reclaimed would be required unless conditions warrant a varying depth. On large surface disturbing projects (e.g., gas processing plants), topsoil would be stockpiled and seeded to reduce erosion. Where feasible, topsoil stockpiles would be designed to maximize surface area to reduce impacts to soil microorganisms. Stockpiles remaining less than two years are best for soil microorganism survival and native seed viability. It is recommended that stockpiles be no more than 3 to 4 feet high. Areas used for spoil storage would be stripped of topsoil before spoil placement. The replacement of topsoil after spoil removal would be required.

Temporary disturbances that do not require major excavation (e.g., small pipelines and communication lines) may be stripped of vegetation to ground level using mechanical treatment, leaving topsoil intact and root mass relatively undisturbed.

In support of BLM's mission, soil management is committed to sustaining the productivity of soils.

Watershed

The entire land surface should be considered for nonpoint pollution control, with specific attention given to areas where the flow of water is concentrated (including roads, well pads, and stream channels).

Stream sediment, phosphate, and salinity load would be reduced where possible.

In areas where ground water exists 20 feet or less from the surface (Wyoming Oil & Gas Commission), produced water from oil and gas operations would be disposed of in an approved closed storage system or by other acceptable means complying with Onshore Order 7.

Where depth to ground water is less than 100 feet and soil permeability is more than 0.1 foot/day, plants, mills, or associated tailings ponds and sewage lagoons would not be allowed.

To protect watershed resources during wet periods, vehicle travel, particularly large or heavy truck traffic, would not be allowed unless travel occurs on roads that are graveled for all-season use.

Crossings of ephemeral, intermittent, and perennial streams associated with road and utility line construction would generally be restricted until after spring runoff and until normal flows are established.

Vegetative buffer strips of at least 100 feet should be left intact next to a perennial stream during controlled burning.

The inner gorge of intermittent and ephemeral drainages should be burned in such a manner as to leave unburned patches of vegetation. At no time should the burn consume more than 50 percent of the cover within the inner gorge area. The use of herbicides for vegetative manipulation should proceed with great care when in proximity to willows, cottonwoods, or aspens, so as not to damage such stands unless the prescription actually calls for such removal.

Herbicide loading sites will be located at least 500 feet from live water, floodplains, riparian areas, and all special status plant locations and will be utilized in accordance with the guidelines in Appendix 9-2 of the Green River RMP. Treatments will adhere to all label directions.

Floatable stream stretches should be managed so that there is no more than a 10 percent increase in fecal coliform count.

Vegetative buffer strips should be maintained between developed recreational facilities and live water.

Prior to installing toilet facilities associated with recreation, groundwater protection would be provided for.

Installation of instream structures for fisheries, watershed, or irrigation enhancement must be completely engineered if the high flow for the stream exceeds 10 cubic feet/second (CFS).

Floodplains by their very nature are unsafe locations for permanent structures. With an inundation of floodwaters, soils disturbed by construction could experience a rate of erosion greater than undisturbed sites. There is an additional concern over the potential for floodwaters to aid in the dispersal of hazardous materials that may be stored within permanent structures. Therefore, floodplains should have no permanent structures constructed within their boundaries unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases where floodplain construction is approved, additional constraints could be applied.

Section 2.a(2) of Executive Order 11988 states in summary that, if the Head of the Agency finds that the only practicable alternative consistent with the law and with the policy set forth in the order requires siting in a floodplain, the agency shall, prior to taking action, (1) design or modify its action to minimize potential harm, and (2) prepare and circulate a notice containing an explanation of why the action proposed is to be located in the floodplain.

In addition, Section 3 of Executive Order 11988, in reference to federal real property and facilities, states that if facilities are to be located in a floodplain (i.e., when there is no practicable alterative), agencies shall ensure that flood protection measures are applied to new construction, or the agency can rehabilitate existing structures; elevate structures rather than fill the land; and provide flood height potential markings on facilities to be used by the public; and when the property is proposed for lease, easement, right-of-way, or disposal, the agency must attach restriction on uses in the conveyance or withhold from such conveyance.

Disturbances to the soils, such as roads and well pads, can easily concentrate the flow of water, increasing its erosive potential. A 500-foot buffer provides an opportunity for such flows to be dispersed before they reach a stream and often precludes construction in riparian zones. Therefore, there should be no construction within 500 feet of a stream unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases where construction within the 500-foot zone is approved, additional constraints could be applied.

All surface disturbance, permanent facilities, and other such entities shall remain a minimum of 500 feet away from the edge of surface waters, riparian areas, wetlands, and 100-year floodplains unless it is determined through site-specific analysis, and the Field Manager approves in writing, that there is no practicable alternative to the proposed action. If such a circumstance exists, then all practicable measures to mitigate possible harm to the above areas must be employed. These mitigating measures would be determined case by case and may include (but are not limited to) diking, lining, screening, mulching, terracing, and diversions.

To minimize long-term surface disturbances within the vegetated sand dunes, options such as directional drilling, smaller well pads, and surface lines should be considered. To enhance reclamation success through surface stability, techniques to reduce wind erosion should be considered as standard procedures within this area. These methods could include snow fences, soil tackifiers, and erosion control matting.

Well Pads and Facilities

Surface discharge of produced water, including dumping of produced water on roads, will not be allowed unless levels of total dissolved solids (TDS) are less than 5,000 milligrams per liter (mg/1) (state standard for Colorado River drainage) and the water does not contain hazardous material. No produced water would be allowed on roads in Sublette County.

Both produced water and reserve pits should be constructed to ensure protection of surface water and groundwater. The review to determine the need for installation of lining material should be done on a case-by-case basis and consider soil permeability, water quality, and depth to groundwater. Oil-based muds used for drilling operations should be environmentally acceptable.

Pits would be fenced as specified in individual authorizations. Any pits with harmful fluids in them shall be maintained in a manner that would prevent migratory bird mortality (http://mountain-prairie.fws.gov/contaminants/contaminants1c.html).

Abandoned sites must be satisfactorily rehabilitated in accordance with a plan approved by BLM. Soil samples may be analyzed to determine reclamation potential, appropriate reseeding species, and nutrient deficits. Tests may include pH, mechanical analysis, electrical conductivity, and sodium content. Terraces or elongated water breaks would be constructed after slope reduction. Disturbances should be reclaimed or managed for zero runoff from the location until the area is stabilized. All excavations and pits should be closed by backfilling and contouring to conform to surrounding terrain. On well pads and

larger locations, the surface use plan would include objectives for successful reclamation, including soil stabilization, plant community composition, and desired vegetation density and diversity.

On producing locations, operators would be required to reduce slopes to original contours (not to exceed 3:1 slopes). Areas not used for production purposes should be backfilled and blended into the surrounding terrain and reseeded. Erosion control measures should be installed, as they would be required after slope reduction. Facilities would be required to approach zero runoff from the location to avoid contamination and water quality degradation downstream. Mulching, erosion control measures, and fertilization may be required to achieve acceptable stabilization.

Reserve pits would not be located in areas where ground water is less than 50 feet from the surface or soil permeability is greater than 10^{-7}cm/hr.

Produced water from oil and gas operations would be disposed of in accordance with the requirements of Onshore Oil and Gas Order 7, DEQ, and other agencies. Produced water would not be discharged in a way that would adversely affect land or channel integrity, stream health, achievement of standards for healthy rangelands, salinity levels, or proper functioning condition. Water injection and disposal facilities will meet all federal and state standards. The preferred method of produced water disposal is by aquifer reinjection. Water injection and evaporation facilities will meet all federal and state standards.

Any produced water pit or drilling fluids pit that shows indications of containing hazardous wastes would be tested for the Toxicity Characteristic Leaching Procedure constituents. If analysis proves positive, the fluids would be disposed of in an approved manner. The cost of the testing and disposal would be borne by the potentially responsible party.

No surface disturbance is recommended on slopes in excess of 25 percent unless erosion controls can be ensured and adequate revegetation is expected. Engineering proposals and revegetation and restoration plans would be required in these areas.

No sour gas lines would be located closer than 1 mile to a populated area or sensitive receptor. The applicants must use the best available engineering design (e.g., alignment, block valve type and spacing, pipe grade) and best construction techniques (e.g., surveillance, warning signs) as approved by the Authorized Officer to minimize both the probability of rupture and the radius of exposure in the event of an accidental pipeline release of sour gas. A variance from the 1-mile distance may be granted by the Authorized Officer based on detailed site-specific analysis that would consider meteorology, topography, and special pipeline design and/or construction measures. This analysis would ensure that populated areas and sensitive receptors would not be exposed to an increased level of risk.

Wilderness

A controlled surface use stipulation would be applied for activities within one-quarter mile or the visual horizon of the wilderness study area (WSA) boundary. Actions within or adjacent to the WSAs would be evaluated on a case-by-case basis to determine whether appropriate mitigation would be necessary.

Special Status Species

A lease stipulation is applied to all leases for protection of special status species and their habitats.

Mountain Plover (Wyoming BLM Sensitive)

Surveys will be conducted within suitable plover habitat by a qualified biologist using protocol determined by the Rock Springs BLM biologist. Surveys will be conducted to determine the presence or absence of breeding plovers (i.e., displaying males and foraging adults).

Surveys to determine the presence or absence of plovers should be conducted between May 1 and June 15 throughout the breeding range.

The survey type chosen for a project and the extent of the survey area (i.e., beyond the edge of the construction or operational right-of-way) will depend on the type of project activity being analyzed (e.g., construction, operation). Some techniques common to each survey method are as follows:

- Surveys are conducted during early courtship and territorial establishment. Throughout the breeding range, this period extends from approximately mid-April through early June. However, the specific breeding period depends on latitude, elevation, and weather.
- Surveys are conducted between local sunrise and 10 a.m. and from 5:30 p.m. to sunset (periods of horizontal light to facilitate spotting the white breast of the adult plovers).
- Transects are driven within the project area to minimize early flushing. Flushing distances for mountain plovers may be within 3 meters (9 to 10 feet) for vehicles, but plovers often flush at 50 to 100 meters (164 to 328 feet) when approached by humans on foot.
- For all breeding birds observed, additional surveys are conducted immediately prior to construction activities to search for active nest sites.
- If an active nest is located, an appropriate buffer area should be established to prevent direct loss of the nest or indirect impacts from human-related disturbance. The appropriate buffer distance will vary depending on topography, type of activity proposed, and duration of disturbance. For disturbances including pedestrian foot traffic and continual equipment operations, a one-quarter mile buffer is recommended.
- Where nesting plovers are found, activity within one-quarter mile would be restricted from April 10 to July 10. Surveys would be conducted prior to and as close to the actual date of construction initiation as possible, but no more than 14 days before the date actual ground disturbance activities begin. If more than one survey is required, the surveys would be made at least 14 days apart, with the last survey no more than 14 days before startup date.
- Where roads or well pads have been constructed prior to the mountain plover nesting season, and use of these areas has not been initiated for development action, BLM would require site investigations of these areas prior to use to determine whether mountain plovers are using these areas. In the event that mountain plover nesting is occurring, the BLM may require delays in planned activities until nesting is complete.

Greater Sage-Grouse (Wyoming BLM Sensitive)

Management Practices

These management practices have been developed using the information in the "Wyoming Greater Sage-Grouse Conservation Plan" (WGFD 2003), the "Guidelines to Manage Sage Grouse Populations and Their Habitats" (Connelly et al. 2000), and professional analysis of the effects of surface disturbing activities within the BLM Rock Springs Field Office.

* Denotes sections of the management recommendations derived from the "Wyoming Greater Sage-Grouse Conservation Plan" (WGFD 2003).

** Denotes sections derived from the "Guidelines to Manage Sage Grouse Populations and Their Habitats" (Connelly et al. 2000).

These management practices are intended to address only the concerns with greater sage-grouse. It is assumed that other species and resources will be analyzed with any management proposal and management of all resources affected will be considered consistent with the BLM multiple-use mandate.

All Habitats Used by Greater Sage-Grouse

Goal

1. * Maintain landscapes in a vegetative mosaic that provides a variety of early, mid, and late seral stages.

2. * Maintain and enhance healthy sagebrush ecosystems, which provide a diversity of sagebrush seral stages and types (age, structure, cover classes, density), plant and animal species diversity, and patches of appropriate habitat, including riparian areas (Wyoming BLM Standards for Healthy Rangelands [S&Gs]).

3. * Maintain a healthy sagebrush understory with a diversity and abundance of forbs and grasses (S&Gs).

4. * Maintain a healthy, diverse and abundant greater sage-grouse food source, including insects.

5. * Maintain seasonal habitats in amounts and proportions that provide for the needs of greater sage-grouse on a landscape scale.

6. * Maintain a variety of human uses, including traditional and emerging uses, while providing for the needs of greater sage-grouse (Green River RMP).

7. * Maintain soil stability, watershed function, integrity of nutrient cycles and energy flow Green River RMP.

General Guidelines

1. ** Monitor habitat conditions and propose treatments only if warranted by range condition (i.e., the area no longer supports habitat conditions described in the following guidelines).

2. ** Use appropriate vegetation treatment techniques (e.g., mechanical methods, fire) to remove junipers and other conifers that have invaded greater sage-grouse habitat (Commons et al. 1999). Whenever possible, employ vegetation control techniques that are least disruptive to the stand of sagebrush, if this stand meets the needs of greater sage-grouse.

3. ** Increase the visibility of fences and other structures occurring within one-half mile of seasonal ranges by flagging or similar means (fence tags) if these structures appear hazardous to flying grouse (e.g., birds have been observed hitting or narrowly missing these structures or grouse remains have been found next to these structures).

4. ** Avoid building power lines and other tall structures providing perch sites for raptors within 3 km (1.863 miles) of seasonal habitats. If these structures must be built, or presently exist, the lines should be buried or poles modified to prevent their use as raptor perch sites.

5. Surveys within greater sage-grouse habitat would be conducted by a qualified biologist during breeding and nesting periods. Surveys in nesting habitats would evaluate the habitat associated with active greater sage-grouse leks. Habitats would be delineated and mapped.

6. Include sage grouse habitat needs in desired plant community determinations. Manage upland vegetation for a variety of early, mid, and late seral stages at the landscape scale to provide greater sage-grouse with the variety of habitats required annually.

7. * Design and implement vegetation manipulations that benefit sagebrush ecosystems in the long term with consideration for the needs of greater sage-grouse. (see Vegetation Management Section) (Green River RMP and S&Gs).

8. * Manage for age class diversity and patchiness (within and between habitat types) in sagebrush habitats.

9. * Treat noxious weeds and other invasive plants of concern aggressively where they threaten quality of sagebrush habitat (Green River RMP).

10. * Provide information and educational materials about greater sage-grouse and their habitat needs (modified for clarity).

General Breeding Habitat Management (defined as leks, nesting, and early brood-rearing)

Leks and Associated Habitat Goal

1. * Maintain habitats associated with leks in a manner that provides adequate protein, calcium, and phosphorus rich foods, especially forbs to support nest initiation, clutch size, hatching success, and chick survival that will maintain robust populations and increase depressed populations.

2. * Maintain nesting habitat in a manner that provides adequate sagebrush, residual grass, and forb cover to maintain robust populations and increase depressed populations of greater sage-grouse.

3. * Maintain early brood-rearing habitat near nest sites in a manner that provides adequate areas with less sagebrush cover, higher herbaceous cover (especially forbs), and greater insect abundance and diversity as compared to nest sites.

Breeding Habitat Management Practices

1. ** Manage breeding habitats to support 15-25 percent canopy cover of sagebrush, perennial herbaceous cover averaging 4 to 6 inches in height with ≥15 percent canopy cover for grasses and ≥10 percent for forbs and a diversity of forbs (Barnett and Crawford 1994, Drut et al. 1994*a*, Apa 1998) during spring (Table 3-14, Chapter 3). Habitats meeting these conditions should have a high priority for wildfire suppression and should not be considered for sagebrush control programs. Sagebrush and herbaceous cover should provide overhead and lateral concealment from predators. If average sagebrush height is >30 inches, herbaceous cover may need to be substantially greater than 4 to 6 inches to provide this protection. Cover on leks does not have to meet the above requirements.

2. ** Use habitat mapping to identify nesting and early brood rearing habitats.

3. ** Although mining and energy development are common activities throughout the range of greater sage-grouse, quantitative data on the long-term effects of these activities on greater sage-grouse are limited. However, some negative impacts have been documented (Braun 1998). Thus, these activities should be discouraged in breeding and winter habitats, but when unavoidable, restoration efforts should follow procedures outlined in these guidelines. Wildfires should be suppressed in all breeding habitats. In the event of multiple fires, land management agencies should have all breeding habitats identified and prioritized for suppression, giving the highest priority to breeding habitats that have become fragmented or reduced by >40 percent in the past 30 years.

Breeding Habitat Restoration

1. ** Before initiating vegetation treatments, quantitatively evaluate the area proposed for treatment to ensure that it does not have sagebrush and herbaceous cover suitable for breeding habitat. Treatments should not be undertaken within greater sage-grouse habitats until the limiting vegetation factor(s) has been identified, the proposed treatment is known to provide the desired vegetation response, and land use activities can be managed after treatment to ensure that vegetation objectives are met.

2. ** Restore degraded rangelands to a condition that again provides suitable breeding habitat for greater sage-grouse by including sagebrush, native forbs (especially legumes), and native grasses in reseeding efforts (Apa 1998).

3. ** Where the sagebrush overstory is intact but the understory has been severely degraded and quality of nesting habitat has declined, use appropriate techniques (e.g., brush beating in strips or patches and interseed with native grasses and forbs) that retain some sagebrush, but open shrub canopy to encourage forb and grass growth.

4. ** Do not use fire in greater sage-grouse habitats prone to invasion by cheatgrass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheatgrass understory with perennial species using approved reseeding strategies. These strategies could include, but are not limited to, use of pre-emergent herbicides (e.g., Oust™, Plateau™) to retard cheatgrass germination until perennial herbaceous species become established.

5. ** When restoring habitats dominated by Wyoming big sagebrush, regardless of the techniques used (e.g., prescribed fire, herbicides), do not treat >20 percent of the breeding habitat (including areas burned by wildfire) within a 30-year period (Bunting et al. 1987). The 30-year period represents the approximate recovery time for a stand of Wyoming big sagebrush. Additional treatments should be deferred until the previously treated area again provides suitable breeding habitat (Table 3-14). In some cases, this may take <30 years and in other cases >30 years. If 2,4-D or similar herbicides are used, they should be applied in strips in a manner that minimizes their effect on forbs. Because fire generally burns the best remaining greater sage-grouse habitats (i.e., those with the best understory) and leaves areas with sparse understory, use fire for habitat restoration only when it can be convincingly demonstrated to be in the best interest of greater sage-grouse.

6. ** When restoring habitats dominated by mountain big sagebrush, regardless of the techniques used (e.g., fire, herbicides), treat <20 percent of the breeding habitat (including areas burned by wildfire) within a 20-year period (Bunting et al. 1987). The 20-year period represents the approximate recovery time for a stand of mountain big sagebrush. Additional treatments should be deferred until the previously treated area again provides suitable breeding habitat. In some cases, this may take <20 years and in other cases >20 years. If 2,4-D or similar herbicides are used, they should be applied in strips in a manner that minimizes their effect on forbs.

7. ** All wildfires and prescribed burns should be evaluated as soon as possible to determine if reseeding is necessary to achieve habitat management objectives. If needed, reseed with sagebrush, native bunchgrasses, and forbs whenever possible.

8. ** Until research unequivocally demonstrates that use of tebuthiuron and similar acting herbicides to control sagebrush has no long-lasting negative impacts on greater sage-grouse habitat, use these herbicides only on an experimental basis and over a sufficiently small area that any long-term negative impacts are negligible. Because these herbicides have the potential of reducing but not eliminating sagebrush cover within grouse breeding habitats, thus stimulating herbaceous development, their use as greater sage-grouse habitat management tools should be closely examined.

9. ** For all greater sage-grouse populations, lek attendance, nesting, and early brood-rearing occur in breeding habitats. These habitats are sagebrush-dominated rangelands with a healthy herbaceous understory and are critical for survival of greater sage-grouse populations. Mechanical disturbance, prescribed fire, and herbicides can be used to restore greater sage-grouse habitats to those conditions identified as appropriate. Local biologists and range ecologists should select the appropriate technique on a case-by-case basis. Generally, fire should not be used in breeding habitats dominated by Wyoming big sagebrush (i.e., 15-25 percent live sagebrush canopy cover) if these areas support greater sage-grouse. Fire can be difficult to control and tends to burn the best remaining nesting and early brood rearing habitats (i.e., those areas with the best remaining understory) while leaving areas with poor understory.

Leks and Associated Habitat Management Practices

1. * Limit the distribution of specific lek site information given to the general public to avoid stressing birds. Avoid disturbance on lek sites while birds are on the lek, generally from March through May.

2. * Identify and map leks and lek-associated habitats.

3. * Maintain areas of low sagebrush canopy cover and high herbaceous composition adjacent to nesting habitat.

4. * Areas on or within one quarter mile of the perimeter of lek sites will be managed for controlled surface use.

Nesting Habitat Management Practices

1. * Any activity that removes sagebrush should leave adequate areas for nesting greater sage-grouse in occupied greater sage-grouse habitat. Areas with sagebrush canopy cover exceeding 30 percent should be evaluated for treatment (Green River RMP).

2. * Where understory is limiting, vegetation manipulations should be considered to restore the grass and forb component in sagebrush stands to meet the needs of nesting greater sage-grouse.

3. * Monitor nesting habitat to determine limitations on nesting suitability and success.

4. * Manage for forb abundance and diversity to benefit hen nutrition.

5. * Under sagebrush plants suitable for nesting, allow grass to achieve its annual growth potential. The percentage of nesting habitat existing in this condition should be determined on a site-specific basis.

6. * Manage interstitial areas between sagebrush in nesting habitat to enhance food forbs.

7. ** Monitor habitat conditions and propose treatments only if warranted by range condition (i.e., the area no longer supports habitat conditions described in the following guidelines under habitat protection). Do not base land treatments on schedules, targets, or quotas (Green River RMP and S&Gs).

Early Brood-Rearing Habitat Management Practices

1. * Manage sagebrush understory and interstitial areas in early brood-rearing habitats to provide an abundance of forbs, insects, and herbaceous cover.

Late Brood Rearing Habitat (Mid-July Through Mid-September)

As summer progresses and food plants mature and dry, greater sage-grouse move to areas still supporting succulent herbaceous vegetation. They continue to rely on adjacent sagebrush for protection from weather and predators, and for roosting and loafing. These areas may be lower elevation native or irrigated meadows where uplands lack green vegetation. Greater sage-grouse will also migrate to higher elevations, seeking habitats where succulent forbs are still available in sagebrush habitats or select sites, such as moist grassy areas or upland meadows. A delay in maturing of forbs has a noticeable effect on bird movements. In years with above-normal summer precipitation, greater sage-grouse may find succulent forbs on upland sites all summer. In more arid areas, riparian meadows become more important to survival of broods in the late summer. From mid to late summer, wet meadows, springs, and streams are the primary sites that produce the forbs and insects necessary for juvenile birds. The drier the summer, the more greater sage-grouse are attracted to the remaining green areas.

**A variety of habitats, including meadows, farmland, dry lake beds, sagebrush, and riparian zones, may be used by grouse from late June to early November (Patterson 1952, Wallestad 1975, Connelly 1982, Hanf et al. 1994). Generally, these habitats are characterized by relatively moist conditions and many succulent forbs in or adjacent to sagebrush cover.

Late Brood-Rearing Habitat Goal

1. * Maintain a mosaic of riparian habitats and wet meadows that provide an abundance of green forbs near sagebrush cover.

Late Brood-Rearing Habitat Management Practices

1. ** Avoid land use practices that reduce soil moisture effectiveness, increase erosion, cause invasion of exotic plants, and reduce abundance and diversity of forbs (Green River RMP and S&Gs).

2. ** Avoid removing sagebrush within 1,000 feet of greater sage-grouse foraging areas along riparian zones, meadows, lakebeds, and farmland, unless such removal is necessary to achieve habitat management objectives (e.g., meadow restoration).

3. ** Discourage use of highly toxic organophosphorus and carbamate in greater sage-grouse brood-rearing habitats. Less toxic agri-chemicals or biological control may provide suitable alternatives in these areas (BLM policy).

4. ** Avoid developing springs for livestock water in greater sage-grouse habitat, but if water from a spring will be used in a pipeline or trough, design the project to maintain free water and wet meadows at the spring. Capturing water from springs using pipelines and troughs may adversely affect wet meadows used by greater sage-grouse for foraging.

5. * Manage riparian habitats, wetlands, springs, and water sources in close proximity to sagebrush for food forbs and insects while maintaining the integrity of the riparian system (S&Gs and Green River RMP).

6. * Maintain sagebrush cover close to riparian areas or hay meadows.

7. * Consider creating water overflow on developed water sources, and fencing spring sources and overflow areas to provide food forbs.

Habitat Restoration

1. ** Use brush beating or other appropriate treatments in strips 13 feet–26 feet in areas with relatively high shrub canopy cover (>35 percent total shrub cover) to improve late brood-rearing habitats. Brush beating can be used to effectively create different age classes of sagebrush in large areas with little age diversity.

2. ** If brush beating is impractical, use fire or herbicides to create a mosaic of openings in mountain big sagebrush and mixed shrub communities used as late brood-rearing habitats where total shrub cover is >35 percent. Generally, 10–20 percent canopy cover of sagebrush and <25 percent total shrub cover will provide adequate habitat for greater sage-grouse during summer.

3. ** Only construct water developments for greater sage-grouse in, or adjacent to, known summer use areas and provide escape ramps suitable for all avian species and other small animals. Water developments and "guzzlers" may improve greater sage-grouse summer habitats (Autenrieth et al. 1982, Hanf et al. 1994).

4. ** Whenever possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadow habitats.

Fall Habitat (Mid-September to First Major Snow)

* Time spent in fall habitat is highly dependent on weather conditions. Greater sage-grouse normally move off late brood-rearing habitat onto transitional fall habitat before moving onto winter range. As fall precipitation increases and temperatures decrease, greater sage-grouse move into mixed sagebrush-grassland habitats in moist upland and mid-slope draws where fall green-up of cool-season grasses and some forbs occur. As the meadows dry and frost kills forbs, sagebrush consumption increases. Fall movements to winter ranges are slow and meandering from late August to December. With major snowfall accumulation, greater sage-grouse move onto winter range.

Fall Habitat Goal

1. * Maintain linkages of sagebrush habitats that allow birds to move between late brood-rearing and winter habitats.

Fall Habitat Management Practices

1. * Avoid loss of fall habitat.

Winter Habitat (Mid-November through Mid-March)

Winter Habitat Goal

1. * Maintain winter habitats in a manner that results in sustained or improved health with no long-term net loss of severe winter habitat.

Winter Habitat Management Practices

1. ** Sagebrush is the essential component of winter habitat. Greater sage-grouse select winter use sites based on snow depth and topography, and snowfall can affect the amount and height of sagebrush available to greater sage-grouse (Connelly 1982, Hupp and Braun 1989, Robertson 1991). Thus, on a landscape scale, greater sage-grouse winter habitats should allow grouse access to sagebrush under all snow conditions.

2. ** Maintain sagebrush communities on a landscape scale, allowing greater sage-grouse access to sagebrush stands with canopy cover of 10–30 percent and heights of at least 10–14 inches regardless of snow cover. These areas should be high priority for wildfire suppression, and sagebrush control should be avoided.

3. ** Protect patches of sagebrush within burned areas from disturbance and manipulation. These areas may provide the only winter habitat for greater sage-grouse, and their loss could result in the extirpation of the grouse population. They are also important seed sources for sagebrush reestablishment in the burned areas. During fire suppression activities, do not remove or burn any remaining patches of sagebrush within the fire perimeter.

4. ** In areas of large-scale habitat loss (≥40 percent of original winter habitat), protect all remaining habitats.

5. * Use aerial photos, surveys, other remote sensing techniques; local knowledge; and anecdotal information to identify winter habitat.

6. * Map winter habitat by vegetation type, range site, and seral stages.

7. * In greater sage-grouse winter habitat, manage for robust annual growth of leaves and leaders on sagebrush.

8. * When planning sagebrush altering activities, consider winter habitat needs on a landscape scale.

9. * Integrate knowledge of wintering habitat with planning and management activities that will affect sagebrush habitats.

Habitat Restoration

1. ** Reseed former winter range with the appropriate subspecies of sagebrush and herbaceous species, unless the species are recolonizing the area in a density that would allow recovery within 15 years.

2. ** Discourage prescribed burns of >124-acre blocks and do not burn >20 percent of an area used by greater sage-grouse during winter within any 20- to 30-year interval (depending on estimated recovery time for the sagebrush habitat).

Greater Sage-Grouse Guidelines by Resource Program (WGFD 2003)

Livestock Grazing Goal

1. * Manage livestock grazing practices on federal lands in a manner that assists in maintaining healthy greater sage-grouse habitats or improving degraded habitats.

Livestock Grazing Management Practices

1. * Evaluate effects of different grazing treatments on greater sage-grouse productivity, survival, and habitat use.

2. * Actively educate permittees about grazing strategies that can be used to improve or maintain greater sage-grouse habitats. Where appropriate, implement livestock grazing systems that provide for areas and times of rest or deferment.

3. * Avoid heavy utilization of grazed pastures to compensate for rested pastures (a year of rest cannot compensate for a year of excessive use).

4. * Design grazing systems that provide greater sage-grouse habitat in riparian areas and around water sources.

5. * During periods of drought, utilize grazing schemes that reduce impacts on greater sage-grouse (e.g., adjust intensity, timing, and/or duration of grazing).

6. * Investigate the possibility of developing forage banks for use during periods of drought to alleviate inappropriate use by grazing animals on greater sage-grouse habitat.

7. * During the strutting period, reduce disturbance to greater sage-grouse from livestock management activities (e.g., salting or mineral placement, turnout or gathering, bed ground/camp locations, etc.).

8. * Develop and implement management plans for grazing that take into consideration the seasonal greater sage-grouse habitat needs. These management plans could include a variety of grazing systems designed to reach habitat goals, including short-duration, rest rotation, etc.

9. * Look for ways to minimize negative impacts and enhance greater sage-grouse habitat when establishing livestock range improvement projects (e.g., maintain free water available to greater sage-grouse when developing water for livestock, placement of fences, facilities that provide raptor perch sites, construction of roads, salt grounds) (modified for clarity).

10. * Avoid disruptive activities near leks during the breeding season between the hours of 8 p.m. and 8 a.m.

11. * Experiment with types of grazing to improve greater sage-grouse habitat accompanied by monitoring to determine effects on greater sage-grouse.

12. * Where necessary to build or maintain fences, evaluate whether increased visibility, alternate location, or different fence design will reduce hazards to flying grouse. Educate users of the federal lands on small changes can have very positive effects on greater sage-grouse and other species (JMH).

Surface Disturbing and Mineral Development Activities Goal

1. * Develop the resources in a manner compatible with maintenance and enhancement of greater sage-grouse populations and habitat (this sentence has been modified for clarity).

General Surface Disturbing Activities (Mineral Exploration and Development, Mining, Rights-of-Way, etc.) Management Practices (the following practices have been expanded from the Wyoming Greater Sage-Grouse Conservation Plan Minerals Section to include all surface disturbing and disruptive activities)

1. * Evaluate and address the needs of greater sage-grouse when placing well sites, mines, pits, and infrastructure (applies to all surface disturbing activities). Develop a plan for roads, pipelines, etc., to minimize impacts on greater sage-grouse.

2. * Develop a travel management plan that would consider seasonal closure of roads for all but permitted uses (i.e., well maintenance and livestock care) and encourage the reclamation of unnecessary or redundant roads (Green River RMP) (modified for clarity).

3. * Where mineral development occurs in greater sage-grouse habitat, tailor reclamation to restore, replace, or augment needed habitat types (Green River RMP).

4. * Where necessary to build or maintain fences, evaluate whether increased visibility, alternate location, or different fence design will reduce hazards to flying grouse (Green River RMP).

5. ** Avoid construction of overhead lines and other perch sites in greater sage-grouse habitat. Where these structures must be built, bury the lines, locate along existing utility corridors, or modify the structures to prevent perching of raptors and ravens (BLM 6840 policy and ESA).

6. * Reduce noise from industrial development or traffic, especially in breeding and brood-rearing habitats.

7. Do not allow surface discharge of produced water if it will negatively impact greater sage-grouse (BLM 6840 policy and ESA).

8. * Avoid surface and subsurface water depletion that impacts greater sage-grouse habitat.

9. * Consider an exception or waiver of seasonal stipulations if technologies that significantly reduce surface disturbance are used.

10. * Control dust from roads and other surface disturbances within the population's seasonal habitats.

11. * Consider offsite mitigation as an alternative mitigation for mineral development impacts on known greater sage-grouse habitat. Work with mineral entities to develop and implement acceptable offsite mitigative measures for enhancing greater sage-grouse or habitat, as needed, to offset impacts of surface disturbing activities.

12. ** Adjust timing of surface disturbing and disruptive activities (e.g., energy exploration, development, and construction activity) to minimize disturbance of greater sage-grouse breeding activities (this sentence has been modified for clarity) (Green River RMP).

13. ** Human activities within view of or one-quarter mile from leks should be minimized during the early morning and late evening (8 p.m. – 8 a.m.) when birds are near or on leks.

Oil and Gas Development and Sand and Gravel Mining (also see General Surface Disturbing Activities Management Practices)

1. * As a general rule, do not drill or permit new, or expand existing, sand and gravel activities or other surface disturbing activities in nesting habitat between March 15 and July 15 (dates from JMH).

2. Areas on or within one-quarter mile of known active lek sites will be managed as controlled surface use (Green River RMP).

3. * Where greater sage-grouse are present, avoid human activity adjacent to leks during the breeding season between the hours of 8 p.m. and 8 a.m.

4. * Where technically and economically feasible, use directional drilling or multiple wells from the same pad.

5. * Where facilities are developed within greater sage-grouse habitat, minimize potential use by predators.

6. * Encourage the development of new technologies that would reduce total surface disturbance within occupied greater sage-grouse habitat.

Other Solid Mineral Mining Operations (also see General Surface Disturbing Activities Management Practices)

1. * When feasible, new or expanded exploration and/or mining activities in nesting habitats should occur prior to March 15 or after July 15. Following initiation of mining (i.e., topsoil stripping), this recommendation would not be applied.

2. Controlled surface use is applied on or within one-quarter mile of the perimeter of known active lek sites from March 1 to July 15 (Green River RMP).

3. Where greater sage-grouse are present, avoid disturbance by human activity adjacent to leks during the breeding season between the hours of 8 p.m. and 8 a.m. This management practice may not be practical in active coal mining areas.

Pesticide Use Goals in Greater Sage-Grouse Habitat

1. * Conduct pesticide application efforts in a manner that is compatible with greater sage-grouse health and habitat needs.

2. * Encourage development of a statewide pesticide use database.

Pesticide Management Practices

1. * Coordinate with the county Weed and Pest Districts to determine the extent of pesticide use within greater sage-grouse habitats (Green River RMP).

2. * Use the best available science to determine what, if any, effects each pesticide use may have on greater sage-grouse populations.

3. * Cooperate with the Wyoming Game and Fish Department by reporting where pesticides have caused mortality in greater sage-grouse.

4. * Work with county Weed and Pest Districts to identify low-toxicity alternatives to pesticides classified as a medium to very high risk to game birds.

Predator Management Goals in Greater Sage-Grouse Habitat

1. * Maintain habitat quality that discourages predation.

2. * Minimize the negative effects of predation to increase greater sage-grouse recruitment.

Predation Management Practices

1. * Consider predator control to maintain or enhance local greater sage-grouse populations when it is determined there is a demonstrated need, such as when a population is trending downward over a 3-year period, and when populations of "newcomer" predators are artificially high in greater sage-grouse habitat.

2. * Develop and distribute educational materials regarding human practices that may allow establishment/expansion of predator populations. Examples of these activities include garbage/waste disposal that may provide artificial food sources for a variety of predators, and buildings/structures that provide nesting/roosting habitat for ravens/raptors.

3. * Avoid construction of overhead lines and other perch sites in greater sage-grouse habitat. Where these structures must be built, bury the lines, locate along existing utility corridors, or modify the structures in key areas.

4. * Predator control to enhance greater sage-grouse survival should be targeted only at predators identified as impacting that greater sage-grouse population (JMH).

5. * Discourage the establishment of "newcomer" predators in greater sage-grouse habitat.

6. Monitor the effectiveness of any predator control efforts that are implemented (JMH).

Goals Related to Recreation in Greater Sage-Grouse Habitat

1. * Conduct recreational activities in a manner that is not disruptive to greater sage-grouse or their habitat.

Recreation Management Practices

1. * Develop travel management plans and enforce existing plans (JMH).

2. * Restrict off-highway vehicle use in occupied greater sage-grouse habitats (JMH).

3. * Avoid recreational activities in greater sage-grouse nesting habitat during the nesting season (this applies only to activities requiring a "Use Permit").

4. * Restrict organized recreational activities between March 15 and July 15 in nesting habitat (modified for clarity).

5. Recreational facilities should not be located in critical greater sage-grouse habitat.

6. * Viewing greater sage-grouse on leks (and censusing leks) should be conducted so that disturbance to birds is minimized or preferably eliminated.

7. * Do not provide all lek locations to individuals simply interested in viewing birds.

8. * Do not encourage additional dispersed camping within important riparian habitats occupied by greater sage-grouse during late summer (i.e., do not create improvements that would encourage more camping in those areas or issue special use permits in those areas) (modified for clarity).

9. * Avoid construction of overhead lines and other perch sites in occupied greater sage-grouse habitat. Where these structures must be built, bury the lines, locate along existing utility corridors, or modify the structures in key areas.

10. * Control dust from roads and other surface disturbances (Green River RMP).

Vegetation Management Goals

1. * Restore, maintain, and/or enhance sagebrush ecosystem health and ecological processes and functions, including associated riparian systems (S&Gs).

2. * Maintain or enhance natural vegetation patterns (e.g., to facilitate seasonal greater sage-grouse migrations), vegetation functions (e.g., cover/food), and natural processes (e.g., fire) (modified for clarity).

3. * Maintain sagebrush habitats with a healthy understory of native grasses and forbs, diversity of species, diversity of age classes, and patches of varying size and density (S&Gs).

Vegetation Management Practices

1. * Develop priorities and implement habitat enhancements in areas currently occupied by greater sage-grouse.

2. * Develop priorities and implement habitat enhancements in historical or potential greater sage-grouse habitats.

3. * Develop and implement wildfire suppression guidelines that address greater sage-grouse habitat health and management.

4. * Remove juniper and other conifers where they have invaded sagebrush sites important to greater sage-grouse (Green River RMP).

5. * Ensure that vegetation treatments and post-treatment management actions are appropriate to the soil, climate, and landform of the area (Green River RMP).

6. * Recognize that fire provides a natural diversity component in sagebrush habitats; manage fire on a landscape and patch scale at a local level.

7. * Prescribed fire in drier sagebrush communities should be conducted only where it is likely to promote sagebrush ecosystem health.

8. * In higher elevation, wetter sagebrush communities, prescribed fire should maintain, enhance, or promote sagebrush ecosystem health by mimicking natural fire frequencies (Green River RMP).

9. * Where greater sage-grouse are present or desired, fire management objectives should recognize that fire generally burns the better greater sage-grouse nesting and severe winter habitat.

10. * Evaluate all wildfires greater than 40 acres in occupied greater sage-grouse habitat to determine whether rehabilitation of the burned area is needed, with emphasis placed on habitats that would be susceptible to invasion by exotic annual grasses.

11. * When rehabilitation is necessary, the first priority is protection of the soil resource. Use appropriate mixtures of sagebrush, native grasses, and forbs that permit burned areas to recover to a sagebrush-perennial grass habitat (Green River RMP).

12. * Grazing management following sagebrush treatments or manipulations should be designed to benefit long-term sagebrush diversity and ecosystem health. Grazing management strategies should be designed to permit reestablishment of native sagebrush, grasses, and forbs that benefit greater sage-grouse (Green River RMP).

13. * Experiments in habitat manipulation should be relatively small in comparison to a specific greater sage-grouse population.

14. * Determine threshold levels of habitat alteration that can occur without negatively impacting specific greater sage-grouse populations. As a general rule, treat no more than 20 percent of any seasonal habitat type until results are evaluated.

15. * Treat sagebrush in patches rather than contiguous blocks.

16. * Protect patches of sagebrush within burned areas from disturbance and manipulation.

17. * Consider all alternatives when designing sagebrush treatments (Green River RMP).

18. * Additional treatments in adjacent areas should be deferred until the previously treated area again provides suitable greater sage-grouse habitat.

19. * Avoid removing sagebrush adjacent to greater sage-grouse foraging areas along riparian zones, meadows, lakebeds, and farmland (adjacent to federal land) unless such removal is necessary to achieve habitat management goals.

20. * Use mechanical or other appropriate treatments such as herbicides in areas with relatively high shrub cover (>30 percent) and a poor herbaceous component in order to improve brood-rearing habitats.

21. * Implement effective monitoring plans to determine the effectiveness of vegetation treatments.

22. * Develop and maintain cumulative records for all vegetation treatments to determine and evaluate site-specific and cumulative impacts on greater sage-grouse habitats and identify best management practices for successful vegetation treatments.

Weather-Related Goals

1. ** During drought periods (>2 consecutive years), reduce stocking rates or change management practices for livestock, wild horses, and wild ungulates if cover requirements during the nesting and brood rearing periods are not met. Grazing pressure from domestic livestock and wild ungulates should be managed in a manner that, at all times, addresses the possibility of drought.

2. Appropriate actions for improving drought-stressed rangelands could include, but would not be limited to, changes of permitted animal unit months (AUM), modified turnout dates, livestock water developments, range improvements, changes in grazing periods, and growing season rest (JMH).

3. * Better define weather- and climate-related effects on greater sage-grouse populations and their interactions with other limiting factors to correctly understand and assess fluctuations in greater sage-grouse populations. (This will be conducted as part of the implementation, evaluation, and monitoring management strategy [Appendix 17]).

4. * Determine cause and effect relationships between forage, drought, multiple uses, and greater sage-grouse recruitment.

Weather Management Practices

1. * Correlate, on a local level, historical and present weather data with historical and present greater sage-grouse population data to determine weather impacts on greater sage-grouse populations and habitat.

2. * Where drought has been documented for 2 consecutive years, consider implementation of management practices in year 3 that might include drought management of livestock and wildlife grazing, protection of critical greater sage-grouse habitats from wildfire and prescribed fire, predator management programs to enhance nesting and early brood rearing success of impacted populations, water hauling and protection of water sources from evaporation, installation of guzzlers, snow fences and fencing of water source overflows, ensuring that bird ladders are in place on existing water sources, and other appropriate management options developed by local greater sage-grouse working groups.

Habitat Assessment, Monitoring, and Evaluation Goals

Broad-Scale

1. * Monitor and evaluate the distribution of sagebrush systems that can or could support desired greater sage-grouse population objectives.

2. * Monitor and evaluate the health, integrity, and quality of sagebrush systems.

Mid-Scale

1. * Assess, monitor, and evaluate shrub cover characteristics capable of supporting greater sage-grouse seasonal habitat requirements developed from Wyoming data and other applicable data sources. Information and data should include patch sizes, successional stages, shrub age structure, height, density, and distribution throughout the range of sagebrush ecosystems. Particular attention should be given to identifying blocks, islands, corridors, and mosaic patterns and how they are arranged. It is important to maintain connectivity between habitat types.

2. * Develop and continue to refine ecological site descriptions and state-and-transition model assessments based on rangeland health procedures. Incorporate greater sage-grouse habitat preference characteristics related to sagebrush cover, height, growth form, age class and sagebrush species to evaluate the relationship of these characteristics to herbaceous understory requirements for greater sage-grouse seasonal habitats.

3. * Monitor and evaluate herbaceous understory characteristics with an emphasis on diversity of native forbs and grasses based on ecological site potential and successional status.

4. * Restore and rehabilitate sagebrush communities where feasible, desirable, or possible to maintain or enhance desired greater sage-grouse populations.

Fine-Scale

1. * Assess, monitor, and evaluate the distribution and condition of sagebrush and herbaceous cover within desired condition for greater sage-grouse seasonal range.

2. * Assess, monitor, and evaluate the diversity and condition of the understory with emphasis on native species within desired condition for greater sage-grouse seasonal range.

3. * Assess, monitor, and evaluate vegetation characteristics (i.e., shrub height, density, herbaceous structure, and composition diversity) across the range of conditions desired for greater sage-grouse seasonal range.

4. * Assess, monitor, and evaluate restoration and rehabilitation possibilities in sagebrush communities with the potential to provide greater sage-grouse seasonal habitat.

5. * Evaluate goals and objectives for sagebrush systems at the fine scale based on—

- Local knowledge about current habitat use
- Potential to support a variety of species including greater sage-grouse (S&G)
- Existing native shrub patterns and sagebrush system-associated characteristics
- Existing herbaceous cover and conditions
- Frequency and reasonably foreseeable likelihood of disturbance, e.g., fire
- Locations of seedlings or condition of shrub cover on adjacent areas
- Importance of the area to seasonal needs of greater sage-grouse.

Mapping

1. * Develop maps of current greater sage-grouse population seasonal use areas.

2. * Develop maps of greater sage-grouse habitats. Include documented positive or negative influences on greater sage-grouse or their habitat (e.g., land treatments, wildfire, utility corridors, etc.).

3. * Map vegetative type and seral stages in greater sage-grouse habitats. Evaluate quality of sagebrush habitats in the Jack Morrow Hills Planning Area.

4. * Identify and map canopy cover of sagebrush and herbaceous understory of sagebrush habitats. Evaluate habitat quality of herbaceous understory of greater sage-grouse habitats in the Jack Morrow Hills Planning Area.

5. * Periodically review and update maps to portray updated information on greater sage-grouse and their habitat.

APPENDIX 7—HERITAGE RESOURCES MANAGEMENT

INTRODUCTION

The Bureau of Land Management (BLM) and the National Council of State Historic Preservation Officers have consummated a Programmatic Memorandum of Agreement (PMOA) streamlining implementation of the National Historic Preservation Act on BLM lands and for BLM authorized undertakings. Under the agreement, each BLM state office has negotiated a Protocol prescribing how BLM consults with the State Historic Preservation Officer (SHPO) in each respective state to comply with Section 106 of 36 Code of Federal Regulations (CFR) 800 (one of the implementing regulations for the National Historic Preservation Act). The Protocol between the Wyoming BLM and the Wyoming SHPO (WSHPO) is reprinted below (following pages).

NATIONAL REGISTER CRITERIA

Implementing regulations for the National Historic Preservation Act provide four criteria for evaluating the significance of historic properties to determine whether they are eligible for inclusion in the National Register of Historic Places. The Criteria for Evaluation are found in 36 CFR 60, and are reprinted here in full.

Criteria for Evaluation

The qualities of significance in American history, architecture, archaeology, engineering, and culture are presented in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and—

1. That are associated with events that have made a significant contribution to the broad patterns of our history; or

2. That are associated with the lives of persons significant in our past; or

3. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

4. That has yielded, or may be likely to yield, information important in prehistory or history.

WYOMING BLM – SHPO PROTOCOL AGREEMENT

STATE PROTOCOL AGREEMENT BETWEEN BLM AND WSHPO

(Final version 04/15/99)

PROGRAMMATIC AGREEMENT AMONG THE BUREAU OF LAND MANAGEMENT, THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND THE NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS REGARDING THE MANNER IN WHICH BLM WILL MEET ITS RESPONSIBILITIES UNDER THE NATIONAL HISTORIC PRESERVATION ACT

STATE PROTOCOL AGREEMENT

Between

The Wyoming BLM State Director

And

The Wyoming State Historic Preservation Officer

This protocol Agreement (Protocol) supplements the above referenced National Programmatic Agreement (PA). It describes agreements specific to how the Wyoming State Historic Preservation Officer (SHPO) and the Wyoming BLM will interact and cooperate under the National Programmatic Agreement. The goal of the National Programmatic Agreement and this Protocol is to forge a more meaningful and productive partnership with SHPO that will enhance the management of historic properties under the BLM's jurisdiction.

I. RELATIONSHIP TO OTHER AGREEMENTS

Relevant sections of the Wyoming Statewide Programmatic Agreement have been incorporated into the National Programmatic Agreement and this Protocol. As a result, the Wyoming Statewide Programmatic Agreement, signed June 27, 1995, is terminated. Further, all other existing project and special purpose programmatic agreements are terminated unless specifically noted in Appendix A.

Other PAs and MOAs may be developed when specific agreement documents are needed to define procedures which are not covered under the National PA or this Protocol. Additionally, when more than one Federal agency is involved in an undertaking and BLM accepts lead responsibility for Section 106 compliance, the BLM and SHPO may agree to follow the procedures of the National PA and this Protocol instead of developing a separate agreement document, as long as the other agencies agree. The Advisory Council on Historic Preservation (Council), pursuant to the National PA, will review all non-routine interstate and/or interagency projects or programs. When more than one Federal Agency is involved in an undertaking, and an agency other than BLM takes lead responsibility for Section 106 compliance, the National PA and this Protocol do not apply.

II. ADMINISTRATIVE INTERACTION AND REPORTING REQUIREMENTS

The BLM will prepare an annual survey report to the SHPO that describes the implemented actions taken in the previous fiscal year. This report will be due to the SHPO by February 15th of each year and will include information as outlined in Appendix B.

The SHPO and SHPO staff, the BLM State Director, the BLM Deputy State Director for Resources Policy and Management, the BLM Field Office managers, the BLM Deputy Preservation Officer (DPO), and the BLM cultural resources specialists will meet annually in April to review and discuss procedures and polices for managing cultural resources under the National PA and this Protocol. Individual Field Office mangers will further discuss with the SHPO and proposed projects for the current and forthcoming fiscal years which may affect cultural resources. The Council will be invited to participate in the annual meeting and receive a copy of the BLM 's annual report.

III. SHPO INVOLVEMENT IN BLM STATE MANAGEMENT PROCESSES

A. To encourage broader and more proactive participation by SHPO in BLM's management activities related to cultural resources management, the BLM offers the following opportunities:

1. Planning Efforts: Each Field Office responsible for preparing land use plan (Resource Management Plan or RMP amendment) or preparing a cultural resource activity plan at the regional or local level will, when beginning its planning effort, invite the SHPO to participate in scoping for the purpose of identifying issues that should be addressed in the plan. The BLM will invite the SHPO to comment on any proposed cultural resource use allocations, whether they are made in regional, local, or project plans. Field Offices will send all draft and final land use plans and cultural resource project plans to the SHPO.

2. Project Consultation: As major projects become known, each Field Office manager has the responsibility to contact the SHPO to discuss upcoming projects that are likely to affect cultural resources (i.e. large land distributing projects, land exchanges, land sales, etc.). This consultation accomplishment is these projects in ways that meet heritage preservation goals. Such consultation may be by telephone or by meetings which may be held at the State Historic Preservation Office or the BLM Field Office, as agreed between the two parties.

3. Other Meetings and Informal Consultations: The SHPO is encourages to meet with the Wyoming State Office or a Field Office manager at any time to discuss annual work plans, specific undertakings, outreach efforts, or other issues related to the BLM's management of cultural resources. The BLM will make every effort to arrange such meetings in a timely manner and to provide information requested by SHPO. The SHPO and Field Office personnel may consult informally at their discretion on specific undertakings or any aspect of BLM's cultural resource management program.

4. Field Tours: BLM Field Offices will notify the SHPO, in writing, of all public field tours relating to land use planning efforts (RMP's and RMP amendments) or to Environmental Impact Statement (EIS) planning efforts that may affect

cultural resources. The SHPO's views will be specifically requested with regard to management of cultural resources involved.

IV. COOPERATIVE PROGRAM DEVELOPMENT AND ACTIVITIES

The BLM and the SHPO recognize the advantages of working together on a wide range of heritage preservation activities and will cooperatively pursue the following efforts:

A. Data Sharing and Information Management

1. Reports: Field Offices will send the SHPO copies of all cultural resources inventory reports, research designs, treatment plans, and other reports, generated by actions initiated or authorized by BLM. This also includes inventory reports for actions in which no cultural resources are identified. BLM will submit to SHPO copies of all reports for cultural reducer inventories, including site forms, as soon as possible, but no later than 30 calendar days after BLM review and acceptance of the report.

   All known "backlog" documentation that exists in BLM files and which predates the signing of this Protocol should be submitted to the SHPO Review and Compliance Office within one year of the implementation of this Protocol. If SHPO or a BLM Field Office is aware of specific backlog documentation held in either office, both the SHPO and the BLM Field Office should work cooperatively to provide the documentation to the office requesting it.

2. Reporting Standards: BLM and SHPO will collaborate on the development of standards for preparing inventory and treatment reports, and jointly develop isolated artifact and site forms.

3. Data System Management: BLM and SHPO will, through a Cooperative Agreement, develop a Statewide automated cultural records database which will be accessible from all BLM Field Offices. The BLM and SHPO will further collaborate on ways to synthesize and use the automated cultural data to develop Geographic Information System (GIS) capabilities. BLM and SHPO will continue to cooperate in this endeavor by providing financial, personnel, and hardware and software resources as funding becomes available.

B. State BLM Handbook Supplement

In addition to the procedures described in Bureau-wide directories and Manuals, Wyoming BLM will be guided by manual supplements issued by the Wyoming State Office. The BLM will update these manual supplements as needed to conform to Bureau-wide directives, policies issued by the Wyoming State Director, new laws, and new regulations. The SHPO will be invited to participate in development and subsequent revisions of Wyoming Manual Supplements and Handbooks.

BLM field procedures will be detailed in a State BLM Handbook as a supplement to BLM Manual procedures. Disagreement between BLM and SHPO regarding wither development or Implementation of Handbook procedures will be resolved in accordance with the disparate resolution procedures at Section X of this Protocol. All future changes or amendments to the Handbook procedures will be made in cooperation with the SHPO.

C. Public Outreach and Heritage Education

The BLM and the SHPO will work cooperatively to promote and enhance public education and outreach in historic preservation and cultural resources management through the following programs:

1. Archaeology Awareness Month: The BLM and the SHPO will participate in and support financially, as funding permits, Archaeology Awareness Month activities, including public presentations, field tours and excavations, exhibits, archaeology fairs, posters, brochures, and educational activities.

2. Project Archaeology: The BLM and SHPO will support Project Archaeology as a component of BLM's Heritage Education Program, by encouraging staff archaeologists to be trained and serve as facilitators in the program, with the goal of integrating the teaching of archaeological concepts and preservation ethics in Wyoming schools statewide.

3. Adventures in the Past/Heritage Education: The BLM and SHPO may, as funding permits, cooperatively work on the development of interpretation of cultural resources through a variety of media including, but not limited to, exhibits, brochures, lectures, radio and television promotions, Internet web pages, and interpretive signs.

4. Wyoming Archaeological Society: The BLM and SHPO are encouraged to work cooperatively with the Wyoming Archaeological Society to promote preservation ethics, good science, and professional standards statewide to amateur archaeologists by participating in society meetings, serving as chapter advisors, providing presentations and demonstrations, and providing assistance as appropriate.

5. Professional Organizations: The BLM and SHPO cultural resources specialists are encouraged to participate in and work cooperatively with professional historic preservation organizations (e.g. Wyoming Association of Professional Archaeologists and the Wyoming Association of Professional Historians) to promote preservation ethics, good science and good history, professional standards statewide, and open dialogue regarding historic preservation issues.

D. State-Level Historic Preservation Training

The SHPO will assist the BLM and/or participate in both the initial training and future on-going training of Field Office Managers and cultural resources staff relative to the National PA and implementation of this Protocol. Training resources might include, but are not limited to, Wyoming BLM State Handbook or Manual Supplements, planning documents, and statewide historic context documents. Review of training needs and/or additional training will occur on a yearly basis and will coincide with the annual review meeting to be held in April.

E. Historic Context Development

The BLM and SHPO will jointly work to develop standards and guidelines for the development of historic contexts within Wyoming and will strive to involve participation

from other Federal land-managing agencies within the state. The BLM and the SHPO will cooperatively recommend statewide priorities for historic context development involving BLM lands. Recommendations will be considered in the BLM budget process as a statewide benefiting program. Field Managers may also develop project-specific contexts as their funding allows. All historic contexts, however, must be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716). In accordance with Section 101(b)(3) of the National Historic Preservation Act, whereby the SHPO has responsibility for preparing and implementing the State's comprehensive historic preservation plan, the SHPO shall review and provide comments on all BLM history context documents. Historic contexts which define site eligibility criteria, levels of adequate inventory, site documentation requirements, standards for assessment of effects, and/or appropriate treatment of historic properties shall require SHPO concurrence on those aspects. All jointly developed historic contexts within Wyoming shall be endorsed by all participating parties.

F. Public Participation

The BLM will seek and consider the views of the public when carrying out actions under the terms of this Protocol. The BLM will solicit such input through the public participation opportunities afforded by BLM's land use planning and environmental review processes established under the National Environmental Policy Act (NEPA) of 1970 and the Federal Land Policy and Management Act (FLPMA) of 1976, and in accordance with regulations at 43 CFR Part 1610.3. Interested parties shall be invited to participate in the review process [Section VI.B below] if they have interest in a BLM undertaking or action on historic properties. Such interested parties may include, but are not limited to, local governments, grantees, permitees, or owners of affected lands or land surfaces, Indian tribes, and other interested parties determined jointly my BLM and SHPO.

V. NATIVE AMERICAN PARTICIPATION

The BLM will consider the effects of its undertakings on historic properties significant to Native Americans because of an association with tribal history or because of a property's traditional religious or cultural importance to a tribe. In consulting with Indian tribes or authorized tribal representatives, the BLM will be guided by the following:

- BLM Manual 8160, Native American Consultation and Coordination Executive Order No. 13007, Indian Sacred Sites
- National Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties

Additionally, if Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered as a result of a BLM undertaking, the BLM will comply with Section 3 of the Native American Graves Protection and Reparation Act (NAGPRA) and its implementing regulations at 43 CFR Part 10, Subpart B. These situations will also be treated as archaeological discoveries and appropriate discovery procedures, as defines in the BLM Handbook or other guidance developed jointly between the BLM and the SHPO, will be followed.

VI. CASE-BY-CASE REVIEW PARAMETERS

A. Review Thresholds

At a minimum, the BLM will request SHPO comments on eligibility and effect in the following situations:

1. Non-routine interstate and/or interagency projects or programs.

2. Undertakings adversely affecting National Historic Landmarks or National Register eligible properties.

3. Undertakings containing cultural resources that are or have the potential to be eligible under National Register Criteria A, B, or C [36 CFR Part 60.4].

4. Land exchanges or land sales affecting historic properties which will no longer be under BLM ownership or management.

5. Undertakings that are determined by the BLM or the SHPO to be highly controversial (e.g. undertakings that receive unusual public attention and/or involve significant conflict related to cultural resources).

B. General Review Process

1. SHPO Response Time: Unless otherwise agreed, the BLM shall afford the SHPO 30 calendar days from receipt of appropriate documentation to respond to any BLM communication regarding identification, evaluation (unless Section VII.C.3 applies), effect determination (or 15 days for findings of "no effect" pursuant to Section VII.D.1.c), or treatment of effects. Should the SHPO not respond within the appropriate time limit, the BLM may assume SHPO concurrence and can proceed with the BLM's proposed course of action. The BLM will document non-response by the SHPO in the Annual Report for cases where review is requested or required.

2. Concurrent SHPO Comment – Eligibility and Effect: The BLM will make determinations of eligibility according to 36 CFR Part 60.4. When SHPO review is requested or required, SHPO will be provided 30 calendar days to comment on BLM's determination of eligibility and effect. These may be done concurrently.

3. When Eligibility or Effect is in Doubt: BLM will confer with the SHPO whenever questions about eligibility and/or effect arise.

4. Disagreement on Eligibility: If the BLM and SHPO disagree on the eligibility of a property, BLM will seek a determination of eligibility from the Keeper of the Register pursuant to 36 CFR Part 63.2.

5. Sequence of Consultation: Project-related communications to the SHPO should proceed in accordance with the sequence of consultations as specified in this Protocol. The BLM may also request comments for an individual portion of a project (e.g., segmented inventories like large geophysical projects or land transfers). Each segment of a project will be inventoried and reported as though it is a complete project. The first report submitted for a segmented project will include a brief description of the overall project. The same SHPO tracking

numbers shall be referenced by the BLM in all subsequent documentation submitted to the SHPO relating to other segments of the project.

6. Resolving Objections: If the SHPO objects to the BLM's finding of effect or treatment, resolution will follow the Dispute Resolution Procedures pursuant to Section X.A of this Protocol.

VII. IDENTIFICATION, EVALUATION AND TREATMENT OF HISTORIC PROPERTIES

The BLM will ensure that historic properties which may be affected by any undertaking are identified and evaluated in accordance with 36 CFR Part 800 and follow the procedures established below. The BLM will ensure that project-specific surveys and other efforts to identify and evaluate historic properties are conducted in accordance with appropriate professional standards as defined in BLM Manual 8110, Identifying Cultural Resources, BLM Manual 8120, Protecting Cultural Resources, Wyoming BLM supplements, the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic preservation (48 FR 44716), and relevant SHPO guidance.

A. Determining Inventory Needs

1. Exemptions: Actions exempted from case-by-case review are identified at Appendix C, subject to the following:

   a. The BLM cultural resource specialist will, after determining information needed to identify and evaluate cultural properties, determine if specific projects or activities should be appropriately be exempted from case-by-case review, as described in Appendix C.

   b. Upon recommendation by any party to this Protocol, other classes of exempted actions may be added to Appendix C if the BLM and the SHPO agree that such undertaking qualify.

   c. A record listing all undertaking authorized under this section will be documented in the Annual Report in accordance with the information requirements stipulated in Appendix B. Exempted actions do not require reports or any notification to the SHPO at the time of the undertaking.

2. Disturbed Areas: If the proposed undertaking is not listed in the exemptions found in Appendix C, the BLM cultural resource specialist will determine whether previous ground disturbance has modified the surface so extensively that the probability of finding intact cultural properties is negligible. If such disturbance has occur in the area of potential effect, the BLM may proceed with the undertakings authorized under this section will be documented in the Annual Report in accordance with the information requirements stipulated in Appendix B.

3. Previous Adequate Inventory: The BLM cultural resource specialist will determine whether the area of potential effects has been adequately inventoried for historic properties. If an adequate Class III inventory has been completed (generally after 1980 as defined in the Wyoming BLM Handbook) and previously reviewed by the SHPO, the BLM may choose to proceed. A record

listing undertakings authorized under this section will be documented in the Annual Report in accordance with this information requirements stipulated in Appendix B.

4. Areas with Low Potential for Containing Historic Properties: The BLM and the SHPO may jointly determine that specific areas do not need to be inventoried because current information suggests that the area has little or no potential to contain historic properties. Such determinations may be developed in two ways:

   a. Project-Specific: The BLM will consult with the SHPO on project-specific exemptions due to low site probability. The SHPO will be provided 30 calendar days to comment.

   b. Supplemental Protocol Agreements: Low site probability due to environmental factors or other conditions may allow large blocks of land to be exempted through a Supplemental Protocol Agreement (SPA) and listed in Appendix A of this Protocol.

B. Identification

1. Information Needs: The BLM will, during the earliest feasible stage of any undertaking, determine the information needed to identify and evaluate historic properties situated within the area of potential affects. Such determination may be based on a file search of the SHPO/BLM cultural resource records, aerial photographs, GLO records, BLM land records, resource management plans, project-specific NEPA documents of the proposed project area and on information sought and obtained from the SHPO and from interested persons.

2. Level of Inventory: If the BLM determines that a Class II inventory of the area of potential effects (APE) is necessary, the BLM need not seek the SHPO's views on identifications efforts. If the BLM determines to conduct an inventory at less than a Class III level of intensity, BLM will consult, in writing, with the SHPO on the adequacy of the inventory design prior to initiating the inventory or authorizing the proposed undertaking. Any disputes over the adequacy of the proposed inventory efforts shall be resolved in accordance with the dispute resolution clause at Section X.A of this Protocol.

3. Defining Area of Potential Effects (APE): The appropriate size of APE's for specific types of projects will be defined in the BLM Handbook or other guidance developed jointly between the BLM and the SHPO. The size of the survey area outside of an APE shall be at the discretion of the BLM Manager, taking into account the recommendations of the cultural resource specialist.

4. Project Segmentation: The BLM may determine that some very large projects (e.g., geophysical projects or land transfers) can be more efficiently completed if segmented. If a project is to be segmented, the SHPO should be notified, in writing, in accordance with the BLM Handbook or other guidance developed jointly between the BLM and the SHPO. Reports for segmented projects should be submitted as per Section VI.B.5 of this Protocol.

5. No Find Situations: If the BLM determines that no historic properties are present in the APE as a result of the Class III survey inventory, it will immediately upon review and acceptance, submit its report to the SHPO, notify interested persons, and proceed with the undertaking.

C. Evaluation for National Register Eligibility

1. Classes of Properties Not Eligible for the National Register: The BLM and the SHPO may jointly determine a class or classes of properties to be ineligible for listing on the National Register and not meriting further consideration for purposes of Section 106. Such properties require no formal documentation and are listed in Appendix E of this Protocol.

2. Evaluation Standards: Evaluations shall be consistent with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 FR 44729) and other relevant guidance such as National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation.

   a. Sites within the APE: The BLM will ensure that any properties identified within a project's APE are evaluated in accordance with the provisions of this Protocol.

   b. Sites with boundaries extending outside the APE: Sites located within the APE but which have boundaries that extend outside of the APE must be evaluated, and tested as appropriate, in the area of the site most likely to yield information. his may require the site be tested outside the APE.

   c. Sites outside the APE: All properties completely outside of the APE but within the survey area may be generally left as unevaluated. However, sites should be evaluated to the extent that surface manifestations or natural subsurface soil exposure allows without extensive probing and without subsurface testing when possible.

3. Properties with only Archaeological or Historical Research Value: Using the guidelines referenced at VII.C.2. above, the BLM cultural resource specialist will determine if properties significant only for their potential contribution to archaeological and historical research are eligible for the National Register. The effectiveness of the BLM's evaluation of these properties may be discussed by the SHPO and BLM at the annual review meeting.

4. Properties with Associative or Design Value: Excluding property types discussed under VII.C.3 above and historic linear features, the BLM will evaluate the National Register eligibility of all other properties in consultation with the SHPO. These include properties significant for their association to events (Criterion A), their association with important persons (Criterion B) [36 CFR Part 60.4]. Historic period linear features may be recorded and evaluated as specified in Appendix D, "Recordation and Evaluation of Historic Period Linear Features". If the BLM and the SHPO agree that no properties identified within an undertaking's area of potential effects qualify for listing on the National Register, BLM may proceed with the undertaking.

5. Disagreement of Eligibility: If the BLM and SHPO can cannot resolve a disagreement on the eligibility of a property, the BLM will seek a formal determination of eligibility from the Keeper of the National Register pursuant to 36 CFR Part 63.2.

D. Assessment of Effects

1. No Effect Situations:

a. Avoidance of Unevaluated Properties on Geophysical Projects: Cultural resource inventories conducted specifically for geophysical exploration projects will not be required to evaluate identified properties provided the properties are avoided by an appropriate distance as defined in the BLM Handbook. Proper avoidance will be regarded as a "no effect" situation. The BLM will submit its report, as approved by the BLM cultural resource specialist to the SHPO and proceed with the undertaking.

b. Other Avoidance of Effects: If an undertaking is modified to avoid effects to historic properties under National Register Criterion D through project relocation, project redesign, erection of barriers, or fencing of construction, the undertaking will be regarded as a "no effect" situation. The BLM will submit its report, as approved by the BLM cultural resource specialist, to the SHPO and proceed with the undertaking.

c. Requests for Determination of "No Effect": The BLM may request, in writing, SHPO's concurrence on all other situations which the BLM believes to be a "no effect." The SHPO shall be provided 15 calendar days to respond to the BLM's finding of "no effect."

2. No Adverse Effect Situations: Historic properties eligible under National Register Criterion D [36 CFR Part 60.4(d)] may contain areas with significant cultural deposits and areas which would contribute little or no information about prehistory or history. When an undertaking is planned within the boundaries of these properties and will not affect the qualities which contribute to the significance of the property, it will be considered a "no adverse effect" situation. The BLM will submit its report, as approved by the BLM cultural resource specialist, to the SHPO and proceed with the undertaking.

3. Adverse Effect Situations: In determining if an undertaking is considered to have an adverse effect, the BLM and the SHPO will apply the Criteria of Adverse Effect at 36 CFR Part 800.9(b). An "adverse effect" situation occurs when treatment efforts will not be able to mitigate impacts to a historic property or when the Field Office manager determines that mitigation is unfeasible or is not appropriate or cost effective. Pursuant to the National PA, the Council will be required to review undertakings directly and adversely affecting National Historic Landmarks or National Register eligible properties of national significance in accordance with BLM Manual 8110.33.

E. Treatment

1. Determining Appropriate Treatment: In accordance with both the Advisory Council's Treatment of Archeological Properties – A Handbook, Principles VII and VIII, and BLM Manual 8120.21, the preferred strategy for treating potential adverse effects on cultural properties is avoidance. If avoidance is imprudent or infeasible, a range of alternative physical and administrative conservation measures should be considered.

2. Treatments Resulting in "No Adverse Effect" Determinations: Treatment measures which may result in a determination of "no adverse effect" include stabilization, data recovery, or HABS/HAER documentation. The BLM will consult with the SHPO on any proposed treatments for findings of "no adverse effect" where Section VII.D.2 does not apply. The BLM will submit written treatment plans and afford the SHPO 30 calendar days to comment on findings of no adverse effect, and provide the SHPO with final reports on the implementation of treatments.

F. Disagreement on Findings of Effect or Treatment

If the SHPO objects to the BLM's finding of effect or treatment, and the issue cannot be resolved through the Dispute Resolution Procedures at Section X.A. of this Protocol, the undertaking will be considered "highly controversial" and will require Council review pursuant to the National POA if Council review is requested by either the BLM or the SHPO.

VIII. DISCOVERY SITUATIONS

A. Planning for Discoveries

The BLM will encourage applicant development of discovery plans for large and complex undertakings and those involving land disturbance on areas known to contain buried sites. Copies of such discovery plans will be forwarded to the SHPO for review along with BLM's determination of effect for the project. The SHPO will be provided 30 days to comment.

B. Unplanned Discoveries

If the BLM determines after completion of the review process outline in this Protocol that an undertaking may affect or has affected a previously unidentified property that may be eligible for the National Register, the BLM will be required to follow appropriate discovery procedures defined in the BLM handbook or other guidance developed jointly between the BLM and the SHPO. Until the BLM Handbook procedures are developed, the BLM will follow 36 CFR Part 800.11.

IX. STAFFING AND OBTAINING SPECIALIZED CAPABILITIES

A. Staffing

The BLM will only allow identification and evaluation of cultural resources by specialists who meet the qualifications and are classified in the appropriate professional series by the

Office of Personnel Management (e.g., Series 193 for archaeologists). Specialists at the GS-5 and GS-7 levels are considered to be performing duties in a trainee or development capacity. Reports prepared by GS-5 and GS-7 specialists, or any cultural resource consultant, must be reviewed and submitted to the SHPO by a GS-9 or higher grade cultural resources specialist.

B. Specialized Capabilities

When the BLM is involved in an undertaking requiring expertise not possessed by available BLM staff (i.e., architectural history), it will obtain that expertise for the purpose of determining National Register eligibility, effects, and treatment for the cultural properties in question. The BLM may request the assistance of SHPO staff in such cases or may obtain the necessary expertise through contracts, BLM personnel from other state, or cooperative arrangements with other agencies.

X. DISPUTE RESOLUTION PROCEDURES, AMENDMENTS, AND TERMINATION

A. Dispute Resolution Procedures

If, at any time, the BLM or the SHPO question an action taken by the other under this Protocol, they will consult to resolve the issue. If the issue concerns an action taken by a Field Manager, the questioning party will consult with the Field Manager to resolve it. If the issue cannot be resolved, the questioning party will request the BLM's Deputy Preservation Officer (DPO) to assist in resolving it. If the issue cannot be resolved, the BLM DPO will refer the issue to BLM State Director to negotiate a resolution with the SHPO. The State Director may refer the matter to BLM Preservation Board which will provide recommendations to the State Director. Except for disagreements on National Register eligibility, findings of effect, or treatment, the final decision shall be made by the BLM State Director.

Disagreements on determinations of National Register eligibility which cannot be resolved through the dispute resolution process will be resolved by the keeper of the Register. Issues relating to BLM's findings of effect or treatment which cannot be resolved through the dispute resolution process shall be considered "highly controversial" and will require Council review pursuant to the National PA if Council review is requested by either the BLM or the SHPO.

B. Amendments to the Protocol

If the BLM or the SHPO wish to amend this Protocol at any time, they will consult to consider requested changes. Amendments will become effective when signed by both parties.

C. Termination of the Protocol

The BLM or the SHPO may terminate this Protocol by providing 90 days notice to the other party, providing that they consult during this period to seek agreement on amendments or other actions that would avoid termination. The BLM DPO may request the assistance of the BLM Preservation Board, the National Conference of State Historic Preservation Officers, or the Council in the consultation process. If the Protocol is

terminated, the BLM will be required to comply with Section 106 of the National Historic Preservation Act by following the implementing regulations at 36 CFR Part 800.

After decertification of a Field Office, the BLM, in consultation with the SHPO, shall develop an action plan to be followed by the decertified Field Office in order to bring that office into compliance with this Protocol. After the subject Field Office believes that it has completed all of the actions specified in the plan, it will notify the State Director through BLM Deputy Preservation Officer. Recertification of the affected Field Office, which will allow that office to continue operating under the terms of this Protocol, will occur at the discretion of the BLM State Director after consultation with the SHPO. The State Director will notify in writing both the Field Office and the SHPO when that Field Office is recertified.

XI. APPENDICES

A. Special Purpose Programmatic Agreements, Memorandums of Agreement and Supplemental Agreements in Effect Under the Protocol

B. Annual Reporting Requirements

C. Actions Exempt from Case-By-Case Review

D. Recordation and Evaluation of Linear Features

E. Site Types Requiring No Formal Documentation

XII. APPROVALS

BUREAU OF LAND MANAGEMENT

/s/ Alan R. Pierson April 15, 1998

Wyoming State Director Date

STATE HISTORIC PRESERVATION OFFICER

/s/ John T. Keck 4/15/98

Wyoming State Historic Preservation Officer Date

SUMMARY OF NATIVE AMERICAN CONSULTATION PROCESSES IN THE JACK MORROW HILLS

BLM identifies tribes that have documented oral traditions of significant cultural use in the planning area or are documented to have had a substantial historic occupancy of the lands being considered under the land use plan.

Consultation is first initiated by certified letter to the appropriate tribal governmental official (e.g., tribal chairman) in a government-to-government process.

Follow-up telephone contact and other communication (as appropriate) are made if initial letter(s) do not elicit response from tribal governmental leaders.

Tribes are kept informed regarding public meetings, and special meetings with tribal leaders may be scheduled if so requested.

Consultation with Native American tribal representatives is relevant at two different stages.

1. Consultation on Land Use Plans

BLM informs tribal councils that it is initiating a planning process and requests comments on—

a. Any interests or concerns the tribe(s) might have with the BLM's management of the planning area.

b. Whether there are any places of traditional religious or cultural importance to the tribe(s) within the planning area, or needs for access to such places, and;

c. Whether there are any traditional cultural leaders or religious practitioners who should also be contacted.

2. Consultation on Land Use Actions

BLM informs tribes and requests comments for all land use actions that have a potential to affect tribal interests or concerns. This is especially relevant to tribal interests identified during the planning process described above.

The BLM should provide the tribe(s) with a copy of the draft environmental document and results of cultural resource inventory. The BLM should invite tribes' comments on the proposed action, including—

a. Concerns the tribes might have with the proposed action in general, and how to resolve any issues that might affect the tribes.

b. How to resolve potential adverse effects to property types generally perceived to be of traditional religious or cultural importance to tribes (e.g., rock cairns/alters, alignments, medicine wheels, rock art) identified in the cultural resource inventory.

c. Whether there are places of traditional religious or cultural importance or sacred places that were not identified as a result of the cultural resource inventory, and if so, how to resolve potential adverse effects on them.

d. How to treat human remains and cultural items (as defined in the Native American Graves Protection and Repatriation Act) if the BLM anticipates any impacts to such remains.

e. Whether there are any traditional cultural leaders or religious practitioners who should also be contacted.

If tribes request it, the appropriate BLM official should meet personally with tribal officials and/or other tribal members to discuss the proposed action.

The purpose of meetings and direct consultation is to elicit specific information to be integrated into the body of data submitted to the authorized officer as a basis for decision making.

Consultation and coordination meetings should be narrowly focused on the proposed BLM action, with the goal of developing (1) a specific description of the places and/or values at issue; and (2) potential management options to avoid or minimize any negative consequences to Native American cultural and religious values and practices.

Annual Meetings

If at all possible, representatives from each BLM field office should plan to meet annually with tribes to discuss land use actions that are planned by BLM or that are expected to be initiated by public land users.

Compensation for Consultation

Tribal officials and/or tribal member or individuals sometimes ask the BLM for payment or other compensation in return for bringing native American issues to BLM's attention and providing the BLM with information on Native American interests and concerns that relate to BLM's land use planning, environmental review, and other legal-regulatory administrative requirements.

BLM does not compensate any entity, including Indian tribes, for any consultation that is required by law, regulation, or other authorities, where the consultation is part of the BLM administrative processes designed to protect the interests of the consulting entity.

Some misunderstandings seem to result from use of the term "consultation." As used in this context, the term means conducting a dialogue or exchanging information. A participant in this kind of consultation is not a "consultant" in the way that a contractor who provides technical services might be called a consultant. Accordingly, "consultants' fees," travel expenses, or per diem are never appropriate to this kind of consultation.

Nothing, however, prevents the BLM from contracting or paying for the services of qualified individuals, firms, or organizations, including tribes and Indian individuals, through BLM acquisition and procurement procedures, to produce in-depth ethnographic reports, *National Register* nominations, or other specific products for proactive management uses that are not considered BLM administrative processes designed to protect tribal interests.

APPENDIX 8—STANDARD OPERATING PROCEDURES FOR RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS

General Operating Procedure Guidelines

Consultation with the interested public who would be affected and an approved environmental analysis would be required for all range improvements before any project would be constructed.

Roads or trails to new construction or project sites would be constructed only if access does not exist.

Proposed range improvements that would result in surface disturbance would be inventoried for archaeological features. All archaeological sites identified would be avoided or mitigated. If undiscovered cultural remains are encountered during construction, the operator would temporarily discontinue activities until the Bureau of Land Management (BLM) evaluates the discovery and determines the appropriate action.

Proposed range improvements that would result in surface disturbance would be inventoried for special status plant or animal species. All BLM sensitive species locations would be avoided or mitigated.

No action would be taken by BLM that could jeopardize the continued existence of any federally listed threatened or endangered plant or animal species.

BLM would also comply with any state laws applying to animal or plant species identified by the state as being threatened or endangered (in addition to the federally listed species).

Wildlife escape devices would be installed and maintained in all water troughs.

Fences in pronghorn antelope winter ranges, deer crucial winter ranges, and known migration routes would be constructed to minimal standards (three-strand wire fence with bottom wire smooth and top two barbed; total fence height of 38 inches), monitored annually, and modified if necessary to facilitate reasonable movement by wildlife.

All areas where vegetation manipulation occurs would be totally rested from livestock grazing for 24 months after treatment, unless an onsite analysis determines this time frame should be more or less, to allow for the recovery and reestablishment of key forage species.

Chemical treatment would consist of applying approved chemicals to meet plan objectives. Before chemicals are applied, the BLM would comply with Department of Interior regulations. All chemical applications would be preceded by an approved pesticide use proposal and an environmental assessment. All applications would be carried out in compliance with the pesticide laws for Wyoming.

All land treatment projects on crucial wildlife ranges will be limited in size, where necessary, by the cover and/or forage requirements of wildlife. Proper mitigation measures would be incorporated.

All burning projects will have a burn plan, an environmental assessment, and a burn permit from the State of Wyoming's Department of Environmental Quality prior to initiation.

The impacts on wildlife winter range areas and on wild horse distribution would be considered in planning all new water facilities.

On identified crucial deer winter ranges where vegetative manipulation is planned or other vegetative disturbance has occurred and reclamation is necessary, a variety of high uality shrub seedlings would be included, such as winterfat, shadscale, four-wing saltbush, and, in certain instances, mountain mahogany and antelope bitterbrush to complement the usual grass mixture.

Exclusion of wild horses and livestock and possible reseeding operations may be required in severely unstable watersheds.

All vegetation treatments will be designed to be irregular in shape for edge effect, cover, and visual esthetics.

General Design Standards of Range Improvements

All range improvements will be designed and constructed in a manner to minimize environmental impacts while maximizing function and cost effectiveness. Prior to the installation, modification, or removal of any range improvements, an environmental assessment (EA) will be prepared analyzing the alternatives for the project.

Reservoirs

Reservoirs are constructed by heavy earth-moving equipment that is used to build dikes across drainages. The impoundments created are designed to catch temporary runoff or permanent stream flow to provide a more reliable source of water for livestock and wildlife. Design requirements are determined mainly by the nature and amount of source water. Where permanent flow exists, or in critical wildlife areas, reservoirs will be fenced and offsite watering facilities (troughs) will be installed. This will provide riparian habitat, reduce silt load entering the reservoir, and increase waterfowl survival.

Water will be provided for wildlife in appropriate habitat areas (spring/summer/fall habitat areas). Whenever possible, water will be provided in allotments (including rested pastures) during seasonal periods of need for wildlife.

Wells

Wells are usually drilled in areas where other water sources are unavailable to provide a reliable water source for livestock and wildlife. Drinking troughs will be installed near the well and will be modified to serve young and mature animals, as well as small game and birds. Well sites will be selected based on geologic well site investigations.

Springs

Spring sources are usually developed with a backhoe or other implement designed to expose the aquifer. Source points are gathered into a central point or head box through a perforated pipe and diverted into a pipeline or drinking trough. The spring source will be fenced for protection and to provide riparian habitat. A wildlife drinking trough may be located within the enclosure. The livestock trough will be located outside the enclosure and will also be modified for use by wildlife. All spring developments will be managed as a closed system.

Water Pipelines

Pipelines consist of plastic, usually polyethylene, pipe that is buried by mechanical pipe-laying implements to a depth necessary to maximize the life and efficiency of the pipe material. Pipelines originate at spring

sources or wells and are used to distribute water to otherwise nonserviced areas. Drinking troughs are situated along the pipeline, usually no more than 1 mile apart, to distribute use throughout the area.

Fences

Fences are constructed to provide management boundaries. They provide pastures or outside boundaries for grazing allotments. Because of the potential for impact to wildlife movement, fence design is highly variable. Wire is smooth, barbed, mesh, or combined, depending on the wildlife species involved. Steel line posts are spaced a minimum of 16.5 feet apart. Wooden braces are usually spaced 1/4 mile apart. Fences may be modified in heavy snow or animal migration areas by using wood poles.

Cattleguards

Cattleguards will be installed where fences cross heavily traveled roads or in situations where opened gates would severely compromise management. Cattleguard grids vary in weight and size requirements but usually require a backhoe to install.

GUIDELINES FOR NOXIOUS WEED CONTROL

Chemical treatment by spray application within 100 feet of perennial streams would be prohibited, unless chemicals are approved by BLM for this particular purpose. If riparian vegetation exceeds 100 feet, this buffer would be expanded to make certain this vegetation is not destroyed. Noxious weeds may be treated in accordance with the Rock Springs District Noxious Weed EA (WY-049-EA82-64) and Northwest Area Noxious Weed Control Program Environmental Impact Statement (EIS).

Aerial application of chemicals would not be allowed within 1/4 mile of special status plant locations.

Hand application will be prohibited within 500 feet of special status plant locations, unless needed to protect the special status plant species or its habitat and with approval of the Authorized Officer.

The County Weed and Pest Supervisors will consult with the BLM Authorized Officer prior to initiation of any site-specific treatment projects.

The County Weed and Pest Supervisor with the BLM Rock Springs Field Office (RSFO) will develop a water monitoring plan for any riparian treatment area prior to chemical applications. For management purposes, riparian habitat is the onsite vegetation found immediately adjacent and subject to the influences of surface and subsurface waters from streams, rivers, or standing bodies of water.

Monitoring

All chemical treatment sites will be reevaluated by the County Weed and Pest Supervisors and the BLM Authorized Officer every 1 and 2 years, respectively, after treatment to ascertain the effectiveness of the treatment program. If retreatment is necessary, County Weed and Pest Supervisors in cooperation with the BLM RSFO will develop a retreatment program.

Aerial Application

All aerial application, particularly near live water (ponds or lakes), would require the direct consultation and approval of an Authorized Officer of the RSFO prior to the action. An unsprayed buffer zone of 100 feet will be maintained near live or still water. Spray areas will be irregular in shape.

Vehicular-Mounted Boom Sprayers and Hand Spray Gun

Vehicular-mounted boom sprayers and hand spray guns would mostly be used in nonriparian zones, accessible by vehicle. Near live or still water areas, the spray boom would be used only where feasible. With both methods, sprays would be applied at a height of 1.5 to 2 feet when wind velocity is below 7 mph, except in riparian areas where treatment would only be conducted when wind velocity is below 4 mph.

Wipe Application Method for Liquid Formulations

Wipe application would be used near live water and other aquatic sites, particularly environmentally sensitive areas and where weeds overhang waterways. The herbicide solution would be wiped on the individual plants to be controlled. All herbicide application near water areas described in the Designated Noxious Weed Control EA would require consultation and approval by the BLM Authorized Officer prior to initiation of treatment. A buffer zone or distance designated by the BLM Authorized Officer after consultation with the appropriate County Weed and Pest Supervisor would be maintained near these waters.

Chemical spraying in riparian areas will not be allowed without prior approval of the authorized officer. All spraying will follow guidelines in appropriate BLM manuals.

As an ongoing part of the program, BLM will consider the reinvasion of noxious weeds in the design and implementation of grazing systems.

Chemical treatment and applications will be used only where national guidelines and demonstrated protection can be exercised to prevent unwanted destruction of desirable fauna or flora and to prevent transportation of these chemicals to other areas by water or air movement. Edge effect will be maximized by following natural contours and terrain features.

Grazing of treated areas would be deferred for at least two growing seasons.

No surface disturbing construction of range improvements would be allowed if high seasonal soil moisture would result in excessive rutting of roads, etc. The period from March 15 to May 1 is typically unsuitable for surface disturbing activity.

Guidelines for Brush Control

Brush control refers to the removal of a shrub or tree overstory to release the grass and forb understory from the effects of competition for soil nutrients and water. Brush control also helps with establishing new shrub seedlings and resprouting of existing shrubs. Each proposal for vegetation treatment is reviewed on a case-by-case basis. The type of treatment used is largely dependent upon the purpose of the treatment. Factors directing this decision include issues such as providing a better age stratification of the brush and encouraging new growth, public health and safety, weed control, weather, location, biological conditions, and cost. For more detailed information on vegetation treatment see, Appendix 8. The techniques involved in brush control generally fall into one of three categories: burning, chemical, or mechanical.

Prescribed Burn Treatment Guidelines

Burning involves the use of fire under prescribed conditions to change the character of the vegetative community. This technique takes advantage of the relative fire tolerance between plant species. Prescribed burning is most useful in removing a dominant fire-sensitive overstory species, such as big sagebrush, thereby opening up the community to the natural response of fire- tolerant grasses, forbs, and shrubs. Prescribed fire can also be useful in preparing a seedbed for artificial reseeding. The main disadvantage to prescribed

burning is its harsh initial impact on the site. Initially, ground cover is greatly reduced, erosion potential is increased, wildlife habitat is reduced, and forage production is decreased. Reestablishment of vegetation on the site can be quite slow but usually results in increased productivity, palatability, and species diversity while erosion potential is decreased over pretreatment levels. The cost of prescribed burning is low compared to other techniques.

Prescribed fire will generally be the preferred method of vegetation manipulation to convert decadent stands of brushland to grasslands and to stimulate sprouting of old, decadent aspen stands and/or shrub species. Prescribed burns are preferred in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation. Other vegetation manipulation methods will be considered on a case-by-case basis depending on objectives and cost benefits.

Prescribed burns would be conducted in crucial antelope and mule deer winter ranges or sage- grouse nesting areas only if habitat values would improve for these species. A site-specific analysis would be conducted prior to any treatments. Areas with a significant amount of antelope bitterbrush (*Purshia tridentata*) will be examined and evaluated before prescribed burns are conducted. Burns will be conducted in conditions that support the objective. Edge effect will be maximized by burning in a mosaic pattern whenever possible. Unplanned fires that occur in areas with an approved fire prescription will be allowed to burn as long as they remain within the prescriptions and meet land use objectives. Individual, decadent aspen stands may be burned to promote sprouting and encourage regeneration. Each planned burn will be evaluated and examined in relation to multiple use objectives.

Each alternative has identified the number of acres suitable for prescribed fire to increase forage production. The acreage figures were derived from computer-generated data (geographic information system and satellite imagery) which overlayed precipitation zones, crucial wildlife ranges, and areas with greater than 35 percent brush canopy. Development of allotment management plans (AMP) and other activity plans will further refine the acreage values according to livestock grazing, wildlife, and other resource objectives. Some allotments have very little acreages available for prescribed burns and are not likely to be treated because of the high cost of burning such small areas. Other allotments containing large acreages may not receive the total projected burn acreage because of resource considerations (e.g., greater sage-grouse nesting areas, erodible soils, or other factors). Acreages of prescribed burns may increase or decrease on certain allotments depending on rangeland management needs as addressed in AMPs and other activity plans.

Chemical Treatment Guidelines

Chemical treatments involve the use of ground or aerially applied herbicides on target species to reduce their competitive effect on more desirable species. Many classes of herbicides exist, and they all vary in action, selectivity, and persistence. However, relatively few compounds are approved for use in brush removal on public lands. These compounds are usually selective for broadleaf vegetation, leaving only grasses, tolerant forbs, and shrub species after treatment. For example, if the target species is sagebrush, few species other than grasses will exist immediately following application. However, by the next growing season the seed source for other species will begin to express itself as a result of reduced overstory competition. Generally, by the end of the first complete growing season, increased understory productivity and species diversity are evident. Chemical treatments have less total impact on the site than burning or mechanical treatments but are usually more expensive than burning. In addition, the seedbed resulting from a chemical treatment is usually not as suitable for reseeding because of the amount of standing litter.

Chemical treatment and applications will be used only where control can be exercised to prevent unwanted destruction of desirable flora or fauna and to prevent transportation of chemicals to other areas by water or air movement. Specific methods of application would be used for the control of noxious weeds and the reduction

of sagebrush canopies that have increased to undesirable levels. Sagebrush control areas will be limited to a maximum size of 160 acres. Following natural contours and terrain features will maximize edge effect.

Wipe application methods may be used along the streams that are Colorado River trout habitat and in the special habitat improvement program areas in the planning area, provided no adverse impacts occur to these resources.

Method of control of designated noxious weeds and other invasive species near special status plant sites will be determined by the BLM.

Biological treatment (insects) will be considered to weaken and limit reproduction of noxious weeds in critical riparian areas or areas with sensitive plants and animals where application of chemicals is not feasible. Any insects used for noxious weed control must be carefully tested for host specificity, thereby reducing or eliminating possible adverse effects on native vegetation.

Mechanical Treatment Guidelines

Mechanical vegetation treatment (chaining, ripping, pitting, etc.) will be considered to alter existing vegetation. Mechanical treatments will be examined on a case-by-case basis in relation to multiple use objectives.

All brush control projects will involve site-specific environmental analysis, coordination with affected livestock operators and the Wyoming Game and Fish Department (WGFD) and will consider objectives for other resource uses including livestock, wildlife, and watershed.

Mechanical treatments involve the use of agricultural equipment to simply remove the overstory or to consume the entire community and leave a suitable seedbed. Techniques and implements are highly variable but all share the disadvantage of high cost.

All of the above brush control techniques can be used to prepare a seedbed suitable for artificial reseeding. Where needed, reseeding is a viable technique to establish a more desirable plant community. However, seed and application costs can be high and are sometimes difficult to prove cost effective. Wherever possible, techniques used and sites chosen on the resource area will be those that lend themselves to natural regeneration.

Vegetation manipulation (controlled burning, mechanical treatment, artificial seeding, etc.) will generally be designed in irregular patterns to create more "edges" with islands of vegetation left intact for cover, with the exception of drainages where active channel incision is occurring or in areas where saline or sodic soils are present. Manipulation proposals are handled on a case-by-case basis, followed by animal control measures to ensure reestablishment of vegetation.

Guidelines for Riparian Areas

The minimum acceptable level of ecological condition for riparian areas within the Jack Morrow Hills (JMH) Coordinated Activity Plan (CAP) planning area is proper functioning condition (PFC). In riparian areas where livestock grazing has been determined to be a contributing factor to stream conditions in less than PFC or is determined to be adversely affecting the recovery of the area to PFC, appropriate grazing management practices would be used to help meet the riparian objective for the areas. Appropriate methods would be determined through site-specific analysis. Methods include (but are not limited to) timing and seasons of use, seasonal changes, grazing systems, riparian pasture fences and exclosures, herding, changes in class of livestock, managing use levels, offsite water, offsite salting, rest for 1 or more years, and reduction in number

of animal unit months (AUM). These are not the only means or methods that can be implemented to meet riparian objectives. Depending on the causative agent(s), other methods could include road closures, area closures to off-highway vehicles (OHV), oil and gas development restrictions, and so on. See each section for specific stipulations that can be applied. These methods and practices will be coordinated with the desired plant community (DPC) objectives that will be developed for all habitats.

The current condition, objectives, and trend of the riparian area, along with factors that may be affecting the riparian area, would be considered in determining the appropriate management methods to apply. Interdisciplinary team (IDT) input, (along with input from users and interested parties) is essential in determining the causes of any unsatisfactory conditions and the method(s) to be used for management of riparian areas. Implementation of various management practices is flexible and can change as new information is acquired. As an example, utilization levels (the amount of plant material that can be consumed by grazing animals over an identified time period) could be implemented as a management tool to assist in achieving riparian objectives (PFC, DPC, etc.). DPCs could range from early seral to potential natural community (PNC). Such levels would be developed specific to a geographic area or allotment. Resource data and other information related to these areas would be used to help determine appropriate levels. Examples of some grazing management practices can be found in the Management Situation Analysis (MSA) on file in the RSFO.

Technical Report 1737-4 (page 10), also referenced in TR 1737-9, states that utilization targets or guidelines are a tool that can be used to help ensure that long-term objectives are met. When riparian conditions are unsatisfactory, a decrease in the use of riparian forage by grazing animals (and corresponding decrease in time spent in the riparian zone) can have such effects as increasing plant material for the protection of stream banks, decreasing surface runoff and soil compaction, increasing infiltration, and providing for increased root reserves. Additional management actions may be necessary to accomplish objectives for riparian condition on a site-specific basis.

GUIDELINES FOR GRAZING AREAS

Achieving the "Wyoming Standards for Healthy Rangelands" is the first priority for all grazing allotments. If livestock grazing is determined to be a factor in not meeting the standards, appropriate management actions would be implemented. The BLM staff (IDT) would work with livestock operators and interested public to determine the most appropriate methods for meeting the standards. Achieving significant progress toward meeting the standards would be made within a reasonable time frame (subject to climatic variability and other constraints).

Appropriate actions for improving degraded rangeland and riparian habitat could include, but are not limited to, reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, shorter grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions.

OTHER ACTIONS

Other new site-specific actions will be considered, and consultation and coordination with affected permittees and interested public will occur.

APPENDIX 9—RECLAMATION AND MONITORING

RECLAMATION GOALS

Reclamation goals are to stabilize disturbed sites by reducing runoff and erosion; reestablish healthy, vigorous ground cover on these areas to its original condition or better by using native plant species; restore wildlife habitat and livestock forage; and restore visual quality to meet established visual resource management objectives on all areas of surface disturbance, reducing visual contrast and enhancing aesthetic values.

RECLAMATION OBJECTIVES

To achieve the above goals, disturbed sites would be reclaimed with perennial native grasses/forbs/shrub species reflecting the species naturally growing on the site before disturbance occurs. The goal is to achieve 100 percent of predisturbance cover of desired species, with bond release occurring when 80 percent of the predisturbance cover exists and the site is judged to be on its way toward 100 percent. Objectives may be modified as new information is acquired or if needed to conform to Jack Morrow Hills Coordinated Activity Plan (JMH CAP) objectives.

PLANNED ACTIONS AND REQUIREMENTS

Surface disturbing projects would be required to use the best management practices described in Appendix 6.

All surface disturbing and reclamation activities that would occur within the Steamboat Mountain Area of Critical Environmental Concern (ACEC), Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC, or Oregon Buttes ACEC would meet the vegetation and habitat management objectives specific to that ACEC.

Within the ACECs and overlapping crucial elk winter range and parturition areas, revegetation of disturbed areas with big sagebrush and other shrubs would be required to maintain and/or improve big game habitat. Planting of shrubs would be required to the same density that occurred onsite before disturbance.

Before any onsite activity, an Erosion Control, Revegetation, and Restoration Plan (ERRP) (outlined in the Green River Resource Management Plan [RMP] Record of Decision Appendix 5-3) may be required. The operator and the Bureau of Land Management (BLM) would perform an onsite inventory in critical areas, such as shrub and cushion plant communities, to document plant species composition and cover values. This will establish a baseline standard to use in developing postdisturbance plant composition and cover values, seed mixes, and site information required for the restoration plan. Reseeding would be performed with plant species native to the vegetation communities of the planning area.

RECLAMATION MONITORING

All sites would be monitored by BLM for reclamation success under the standard BLM guidelines. Inspections would be based on the standard practices in Appendix 6.

Monitoring of a reclaimed area is a joint effort between BLM and operators. BLM would inspect the site during the initial seeding and the following growing season for compliance with the reclamation requirements. The operator is responsible for notifying BLM as soon as the site has met the reclamation objectives identified for the sites. If BLM agrees that the site's reclamation objectives have been met, the operator is released from any further reclamation responsibilities. If BLM does not feel the reclamation objectives have been met, further treatment may be prescribed. Sensitive areas, such as basin big sagebrush,

mountain mahogany, chokecherry, serviceberry, or bitterbrush communities, would be monitored on an annual basis by BLM and the lessee/operator/permittee until shrubs are reestablished onsite. Specific monitoring techniques in critical shrub areas would be developed.

REVEGETATION

Standard native plant seed mixes would be developed for each ecological site type in the planning area; however, more specific seed mixes could be designed as needed as part of the ERRP process. In sensitive areas, plantings of containerized native shrub seedlings may be required.

The revegetation time frames shown below are assumed for reclaimed sites in the respective precipitation zones of the planning area. These time frames represent the minimum amount of time it would likely take to see reestablishment of a native plant community similar in composition to the one existing onsite predisturbance. These rates do not assume that the plant community would be reestablished to the same height and cover value. In some cases, reestablishment of a healthy, vigorous grass stand might provide better forage values than existed before disturbance.

- 7–9" Precipitation Zone
  – Typical establishment of perennial native grasses/forbs in 3 to 5 years
  – Typical establishment of shrub species in 20 to 30 years.
- 10–14" Precipitation Zone
  – Typical establishment of perennial native grasses/forbs in 2 to 3 years
  – Typical establishment of shrub species in 20 to 30 years.

It is expected that basin big sagebrush, chokecherry, and serviceberry shrubs removed during site disturbance would not likely be reestablished to predisturbance size and cover rates during the life of this plan. Therefore, revegetation of the site would not necessarily replace the wildlife forage/browse values that were found on the site predisturbance (e.g., the replacement time of the basin big sagebrush to reach the same height and cover values that existed before disturbance might be as long as 70 years or more). However, it is expected that adherence to reclamation requirements would eventually provide for the return of these areas to shrub communities.

STABILIZED DUNES

Disturbing stabilized dunes would create blowout areas that would be difficult to reclaim. Plant succession in dunes is a very long process, depending on stabilizing the dune and establishing appropriate pioneer species, which then build up nutrients and organic matter in the sand-soil. Phases of dunal succession last for hundreds of years, until reestablishment to predisturbance vegetation occurs. Shrub communities such as basin big sagebrush, mountain mahogany, and bitterbrush are documented to require 100 to 150 years to become reestablished on activated sand dunes (Chadwick 1965). It is unknown how successful artificial revegetation may be on the dunes. For that reason, surface disturbing activities on stabilized, vegetated dunes are not recommended. However, if such activities do take place, it is recommended that at the time of permitting, the site ERRP and the Application for Permit to Drill reclamation plans include what extra measures would be taken to ensure site stability. These methods could include erosion control matting, soil stabilizers, and/or snow fences.

ACTIVE DUNES

Surface disturbing activities that would require reclamation in the active dune field are not recommended as the dunes continue to shift and move. Road construction and new access might not be feasible. Even if sand

stabilization could be temporarily achieved in the immediate vicinity of the disturbance, the nearby shifting dunes would likely interfere with the activity. In addition, the dunal ponds (flockets) could be affected, and these would be extremely difficult to reclaim and revegetate.

Monitoring Oil and Gas Development, Roads, Wildlife, Rangeland, Groundwater, and Watershed

To meet the objectives of the JMH CAP and to conform with the Green River RMP, monitoring would be accomplished by BLM and/or required of operators (oil and gas, rancher, right-of-way applicants, etc.). Monitoring is provided for in the Code of Federal Regulations (40 CFR 1505.2(c) and 1503.3). The regulation, in its requirements relative to the National Environmental Policy Act and agency decisionmaking, states, "...a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation" (1505.2(c)).

BLM would conduct extensive monitoring inspections of construction, drilling, and rehabilitation operations, through a compliance officer and/or an interdisciplinary team, to ensure acceptable attainment of objectives. The monitoring inspections would be based on the standard practices described in Appendix 6.

Specific activities and resources to be monitored include oil and gas, wildlife, and forage.

Oil and Gas Development

Reclamation: All past, present, and future reclamation would be monitored to ensure that the following goals have been met with regard to successful revegetation and restoration.

- Immediate site stabilization to limit wind and water erosion
- Establishment of vigorous stands of desirable plant species to limit invasion by noxious weeds
- Implementation of noxious weed control in cooperation with the County Weed and Pest Control Agent
- Establishment of vegetation consistent with wildlife, livestock, and wild horse needs
- Reduction of visual contrast and enhancement of aesthetic values
- Compliance with site-specific revegetation requirements
- Regenerating and self-supporting vegetation
- Long-term shrub and big game habitat establishment.

Monitoring of a reclaimed area is a joint effort between BLM and the operator. BLM would inspect the site during the initial seeding and the following fall for compliance with the reclamation requirements. The operator is responsible for notifying BLM as soon as the site has met the reclamation objectives identified for the site. If BLM agrees that the site's reclamation objectives have been met on wells where final reclamation has been completed, the operator is released from any further reclamation responsibilities. If BLM does not feel the reclamation objectives have been met, further treatment may be prescribed. The reclamation monitoring goal for revegetation would be to adequately characterize ground cover and vegetation canopy cover and to determine vegetation species occurrence.

Data are compared to acceptance criteria as follows: Reclamation vegetative cover is 50 percent of predisturbance vegetative cover at 2 years and at 80 percent of predisturbance vegetative cover at 5 years. Other acceptance criteria may be adopted as a result of a reclamation technical review.

Monitoring would consist of a step-point transect that would record ground and canopy cover in the reclaimed area.

During monitoring, species would be identified and recorded in the reclaimed area to determine the composition. These data would be compared with the species that were in the seeding requirements. Evaluations would be made of the effectiveness of the seeding effort and the appropriateness of the seed mix.

Erosion condition ratings for the reclaimed sites would be evaluated at the same time the vegetation is monitored. This would be done by visually assessing the amounts of soil movement, surface rock, pedestaling, flow patterns, and rills (BLM's Erosion Condition Class Rating system).

Roads

As a continuing monitoring effort, all existing access roads would be continually evaluated to determine whether they (1) were still necessary, (2) were safe, and (3) have erosion problems. The roads would be reclaimed or maintained as appropriate. It would be the responsibility of the authorized users to conduct preventive and corrective road maintenance throughout their operations, on the roads permitted for their use.

Other Monitoring Efforts

The following subsections identify additional monitoring efforts that will be carried out by BLM and other parties. While not exhaustive, these monitoring efforts will be used to more effectively satisfy the needs of the JMH CAP implementation, monitoring, and evaluation management strategy (Appendix 17). For a comprehensive inventory of the additional monitoring efforts that will be instilled to measure the management indicators, refer to Appendix 17.

Wildlife

The scheduling of wildlife monitoring activities depends on the implementation of habitat improvement treatments. Specific monitoring practices would be as follows:

- Big game distribution within the planning area would continue to be monitored annually. Monitoring would occur at a level adequate to obtain estimates of mule deer densities year round and particularly during midwinter. Big game classification information would be provided by the Wyoming Game and Fish Department (WGFD).

- At least one permanent-line intercept transect with a belt transect and permanent photo points would be established within each treatment area before disturbance and after reclamation treatment implementation. From these permanent transects post-treatment estimates of browse species canopy cover, browse species density by age class, and browse species hedging classes within each treatment area would be obtained. Monitoring intensity would be at least once every 3 years. Coordination with WGFD would occur.

- Two permanent exclosures (one livestock exclosure and one livestock and big game exclosure, actual size to be determined) would be established within the sagebrush-grassland, sagebrush-salt desert shrub, and mountain shrub-sagebrush types within the planning area. Within these exclosures, all of

the vegetative characteristics outlined would be monitored, as appropriate, at least once every 5 years. The construction and monitoring responsibilities would be coordinated with WGFD.

- Utilization levels within and adjacent to treated areas (key areas) would be monitored by BLM using currently accepted BLM methods.

An evaluation to assess fluid mineral exploration and development activity and its effects on elk and their movement patterns, on elk use of habitat (potential fragmentation), on other wildlife species and habitats, and on other sensitive resources would be conducted.

The evaluation would incorporate information from the elk studies conducted within the JMH CAP planning area (see Section 3.1.6.1.3 and below); application of the standards and guidelines for healthy rangelands; proper functioning condition determinations; and other activities and uses. At the end of the evaluation (in about 2 years) a determination would be made on whether currently unleased areas, and currently leased areas that might become available for future leasing consideration (Appendix 17), would be offered for fluid mineral leasing. If these areas were offered for lease, appropriate mitigation would be applied to meet planning area management objectives. If the evaluation concludes that planning area management objectives are not being met, these areas either would not be leased or would be leased with a no surface occupancy stipulation.

Jack Morrow Hills GPS Elk Monitoring Study

BLM, in a cooperative effort with WGFD and the University of Wyoming Cooperative Wildlife Research Unit, has equipped 29 female elk with Global Positioning System collars to monitor a representative sample of the Steamboat elk herd to determine the effects of development and various types of human disturbance. This effort will facilitate the implementation, monitoring and evaluation management strategy (Appendix 17) recommended in the Proposed Jack Morrow Hills Coordinated Activity Plan.

Greater Sage-Grouse Population Monitoring and Assessment[1]

One of the primary components of an effective greater sage-grouse conservation strategy will be the continued development and utilization of a standardized population monitoring program capable of producing meaningful, rigorous status and trend information. These data should also be suitable for aggregate analysis at the statewide level and comparison to similar data sets from other states. The WGFD has recently developed such a database. This database incorporates lek survey and count data, as well as harvest data, including determination of the age and sex from wings deposited in hunter collection barrels. As this database comes into use, it should provide the basis for both local and statewide analysis of greater sage-grouse population status and trend. The information collected in the Jack Morrow Hills Planning area is intended to be compatible with the statewide database.

Breeding Populations

Greater sage-grouse gather on traditional display areas (leks) each spring, affording the opportunity for tracking breeding populations. Possible methods of monitoring breeding populations include lek censuses (annually counting the number of male greater sage grouse attending leks in a given area), lek complex routes (annually counting the number of male greater sage-grouse on a group (complex) of leks that are relatively close and represent part or all of a single breeding population), and lek surveys (annually counting the number

---

1 Based on Sage Grouse Methodology Committee Report on Sage Grouse Management Practices to the 1996 Western States Sage Grouse Workshop, Gillette, Wyoming, and Monitoring of Sage Grouse Habitats and Populations, Draft by J.W. Connelly, K.P. Reese, and M.A. Schroeder, January 2002. Metric measures have been converted and rounded to English units for this appendix.

of active leks in a given area). All monitoring procedures are conducted during early morning (1/2 hour before to 1 hour after sunrise), in reasonably good weather (light or no wind, partly cloudy to clear) from early March to early May. Timing is dependent on elevation of leks and persistence of winter conditions. Greater sage-grouse will begin displaying in late February at lower elevations with milder climates and in years with mild winter weather. Lek attendance will persist into early or mid-May at higher elevations.

All lek data should be collected and reported as defined below.

Lek. A traditional courtship display area attended by male greater sage-grouse in or adjacent to sagebrush-dominated habitat. Designation of the site as a lek requires observation of two or more male greater sage-grouse engaged in courtship displays. New leks would be confirmed by a survey conducted during the appropriate time of day and during the strutting season.

Lek Complex. A group of leks in close proximity between which male greater sage-grouse may be expected to interchange from one day to the next. A specific distance criterion does not yet exist.

Lek Count. A census technique that documents the actual number of male greater sage-grouse observed on a particular lek or complex of leks using the methods described below.

Lek Survey. A monitoring technique designed primarily to determine whether leks are active or inactive and obtaining accurate counts of the numbers of males attending is secondary.

Annual Status

Each year a lek will be determined to be in one of the following status categories:

Active. Any lek that has been attended by male greater sage-grouse during the strutting season. Presence can be documented by observation of birds using the site or by signs of strutting activity.

Inactive. Leks where it is known that there was no strutting activity through the course of a strutting season. A single visit, or even several visits, without strutting grouse being seen is not adequate documentation to designate a lek as inactive. This designation requires either an absence of birds on the lek during multiple ground visits under ideal conditions throughout the strutting season or a ground check of the exact lek site late in the strutting season that fails to find any sign (droppings/feathers) of strutting activity.

Unknown. Leks that have not been documented either active or inactive during the course of a strutting season.

Classification of leks will be defined based on the WGFD criteria.

Locating Leks

Leks can be located by searching from the ground or air from early March to early May.

Helicopters or fixed-wing airplanes would be used for air searches where appropriate.

Transects should be flown at 300 (or less) feet above ground level.

Lek searches would also be conducted from the ground by driving along roads in suspected or known breeding habitat and stopping every ½ mile to listen for sounds of breeding grouse. In less accessible areas, searches can be made from a mountain bike, trail motorcycle, 4-wheel all terrain vehicle, horseback, or on

foot. On a calm morning, breeding greater sage-grouse may be heard at a distance of almost 1 mile. All openings or areas of less dense sagebrush should be searched for breeding birds with binoculars or a spotting scope.

Lek Counts. Lek counts are a common means of monitoring greater sage-grouse populations. Lek counts document the actual number of male greater sage-grouse observed on a particular lek or complex of leks. A lek complex is a group of leks in close proximity between which male greater sage-grouse may be expected to interchange. At this time we are not proposing to participate in the lek counts. However, participation is being considered as an option for future monitoring. If lek counts are conducted, the BLM will use the WGFD protocol.

Lek Surveys. Ideally, all greater sage-grouse leks would be "count leks." However, some greater sage-grouse breeding habitat is inaccessible during spring because of mud and snow or so remote that leks cannot be routinely counted. Other leks may be situated in topography or vegetation that does not allow an accurate count of males from any vantage point. In addition, time and budget constraints limit the number of leks that can be visited. In these cases, lek surveys are the only reliable means of monitoring these populations. Lek surveys are designed primarily to determine whether leks are active or inactive. Only one visit to the lek is required and obtaining accurate counts of the numbers of males attending is secondary. Surveys require less manpower and time than lek counts. They can also be conducted from fixed-wing aircraft or helicopter. Because obtaining a peak male count is not a priority, surveys of leks not on count routes can begin with initiation of strutting in early March and extend into early-to-mid May, depending on the site and spring weather.

Where practicable, lek surveys would be conducted in the same manner and during the same time period each year. In other words, they should not be conducted from a fixed-wing aircraft one year and a helicopter the next year or in early March one year and in May the next. The date and time should be recorded for each survey. Coordinates (currently UTM) for each lek encountered would be noted, as well as any other information that observers might consider important.

Activity status of located leks would be checked by looking for signs of strutting activity. This can be done at any time of the day and for a short period after the strutting season.

The frequency with which known leks are surveyed would be based on manpower, budgets, and rates of habitat alteration or development. Remote leks would be surveyed at least once every 3 three years and others more frequently. Working with cooperators and interested publics can afford the opportunity to use volunteers to survey or count leks and thus increase data collection efforts. The Wyoming Wildlife Federation "Adopt-a-Lek" program has shown to provide a pool of reliable volunteers. Volunteers should be properly trained in monitoring techniques to ensure quality data and prevent disruption of breeding activity.

Winter Populations

Unlike breeding populations and production, no widely accepted methods for assessing winter populations exist. In part, this is because birds may be spread out over large areas during mild winters but concentrated in a relatively small proportion of the area in severe winters.

Probable winter use areas can be searched by 4-wheel drive vehicle, snowmobile, or on foot to document greater sage-grouse winter habitat. Aerial surveys using either a fixed-wing aircraft or helicopter may also be effective in identifying greater sage-grouse winter habitat. Data collected should include at least approximate flock size and location. In addition, cover type (including sagebrush species present), topography, and snow depth data are also valuable but may not be possible to obtain from the aerial observations. Data should be

acquired over a series of years with different snow conditions to give a more complete picture of winter grouse distribution.

Data Analysis. As part of the implementation, monitoring and evaluation management strategy for the JMH CAP planning area, the BLM will initially concentrate efforts in identifying leks and locations of wintering birds. Funding would be pursued for a radio-telemetry and/or GPS collar study to precisely monitor the birds' movements and habitat use.

The development of the Wyoming greater sage-grouse database has facilitated data storage, retrieval, analysis and reporting on both regional and statewide levels. All current and historical data will be submitted to the state to be entered into the database.

Rangeland

Monitoring in conformance with the application of the standards and guidelines for healthy rangelands would be accomplished. Monitoring plans would be developed as part of allotment management plans, grazing plans, and permit terms and conditions as appropriate. Monitoring plans would be developed to assess progress toward meeting and in accordance with JMH CAP objectives. All rangeland monitoring activities would use approved BLM methodologies and could include actual use, utilization, climate, trend, and use supervision.

Additional key areas would be identified on a case-by-case basis, and monitoring studies could be changed as needed.

Groundwater

Plans for groundwater monitoring in this area would be initiated when necessary.

BLM currently is requiring surface casing and cement through the Wasatch Formation, or isolation of other zones from the Wasatch, in an effort to protect the water-bearing zones in that formation. The Wasatch is the chief source for groundwater in the area.

Groundwater monitoring would add to understanding of the area's aquifer systems. The Wasatch aquifer system includes many discrete water-bearing sand lenses separated by relatively impermeable beds. It is unknown if, or to what extent, the permeable beds are interconnected. Less is known about interconnections between porous water-bearing zones in the Paleozoic carbonates. Because the available wells are developed in various sands and carbonate sections in different formations, water quality data may indicate whether mixing of aquifers is occurring.

Mixing of aquifers is of concern due to the large number of wells that penetrate rocks bearing waters of varying quality as well as hydrocarbons. Several fields in the area produce from strata in close stratigraphic proximity to good quality aquifers (Fort Union "Almy" and Mesaverde near the Wasatch). Artificial pressure variations (e.g., water flooding), as well as natural pressure variations, can lead to aquifer mixing, especially when aquifers are breached by wellbores.

Information could also be gained about groundwater supplies that could be made available for other resource activities, such as wildlife and grazing management.

BLM policy is to comply with state requirements regarding the use and protection of groundwater. Federal laws and regulations (including the Federal Land Policy and Management Act and executive orders) define BLM's responsibility relative to groundwater. BLM has authority and responsibility to monitor activities to

protect and enhance the quality of the environment. Oil and gas leasing and subsequent permitting of development have the potential to result in environmental quality problems such as groundwater contamination.

Watershed

Plans for watershed monitoring would be initiated in the area when necessary. Watershed monitoring needs would be included in all resource monitoring plans, if appropriate.

APPENDIX 10—STANDARDS FOR HEALTHY RANGELANDS AND GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT FOR THE PUBLIC LANDS ADMINISTERED BY THE BUREAU OF LAND MANAGEMENT IN THE STATE OF WYOMING

INTRODUCTION

According to the Department of the Interior's final rule for grazing administration, effective August 21, 1995, the Wyoming Bureau of Land Management (BLM) State Director is responsible for the development of standards for healthy rangelands and guidelines for livestock grazing management on 18 million acres of Wyoming's public rangelands. The development and application of these standards and guidelines are to achieve the four fundamentals of rangeland health outlined in the grazing regulations (43 CFR 4180.1). The four fundamentals are expressed as the following circumstances: (1) watersheds are functioning properly; (2) water, nutrients, and energy are cycling properly; (3) water quality meets state standards; and (4) habitat for special status species is protected.

Standards address the health, productivity, and sustainability of the BLM-administered public rangelands and represent the minimum acceptable conditions for these public rangelands. The standards apply to all resource uses on public lands. Their application will be determined as use-specific guidelines are developed. Standards are synonymous with goals and are observed on a landscape scale. They describe healthy rangelands rather than important rangeland by-products. The achievement of a standard is determined by observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles.

Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management practices at the grazing allotment and watershed level. The guidelines in this document apply specifically to livestock grazing management practices on the BLM-administered public lands. These management practices will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable time frames. Appropriate guidelines will ensure that the resultant management practices reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. Guidelines, like standards, apply statewide.

Implementation of the Wyoming standards and guidelines will generally be done in the following manner: Grazing allotments or groups of allotments in a watershed will be reviewed based on the BLM's current allotment categorization and prioritization process. Allotments with existing management plans, and high-priority allotments will be reviewed first. Lower priority allotments will be reviewed as time allows or when it becomes necessary for BLM to review the permit/lease for other reasons, such as permit/lease transfers, permittee/lessee requests for change in use, etc. The permittees and interested publics will be notified when allotments are scheduled for review and will be encouraged to participate in the review. The review first will determine whether an allotment meets each of the six Wyoming standards. If it does, no further action will be necessary. If any of the standards are not being met, the rationale explaining the contributing factors will be prepared. If livestock grazing practices are found to be among the contributing factors, corrective actions consistent with the guidelines will be developed and implemented before the next grazing season, in accordance with 43 CFR 4180. If a lack of data prohibits the reviewers from determining whether a standard is being met, then a strategy will be developed to acquire the data in a timely manner.

On a continuing basis, the Standards for Healthy Rangelands will direct on-the-ground management of the public lands. They will serve to focus the ongoing development and implementation of activity plans toward the maintenance or the attainment of healthy rangelands.

Quantifiable resource objectives and specific management practices to maintain or achieve the standards will be developed at the local BLM district and resource area levels and will consider all reasonable and practical options available to achieve desired results on a watershed or grazing allotment scale. The objectives shall be reflected in site-specific activity or implementation plans as well as in livestock grazing permits/leases for the public lands. These objectives and practices may be developed formally or informally through mechanisms available and suited to local needs (such as coordinated resource management [CRM] efforts).

The development and implementation of standards and guidelines will enable on-the-ground management of the public rangelands to maintain a clear and responsible focus on both the health of the land and its dependent natural and human communities. This development and implementation will ensure that any mechanisms currently being employed or that may be developed in the future will maintain a consistent focus on these essential concerns; and this development and implementation will also enable immediate attention to be brought to bear on existing resource concerns.

These standards and guidelines are compatible with BLM's three-tiered land use planning process. The first tier of this process includes the laws, regulations, and policies governing BLM's administration and management of the public lands and their uses. The previously mentioned fundamentals of rangeland health (specified in 43 CFR 4180.1), the requirement for BLM to develop these state (or regional) standards and guidelines, and the standards and guidelines themselves, are part of this first tier. Also part of this first tier are the specific requirements of various federal laws and the objectives of 43 CFR 4100.2 that require BLM to consider the social and economic well-being of the local communities in its management process.

These standards and guidelines will provide for statewide consistency and guidance in the preparation, amendment, and maintenance of BLM land use plans. These land use plans represent the second tier of the planning process. The BLM land use plans provide general allocation decisions concerning the kinds of resource and land uses that can occur on the BLM-administered public lands, where they can occur, and the types of conditional requirements under which they can occur. In general, the standards will be the basis for planning and developing area-specific management objectives concerning rangeland health and productivity, and the guidelines will direct development of livestock grazing management actions to help accomplish those objectives.

The third tier of the BLM planning process is activity or implementation planning. It is directed by the applicable land use plan and, therefore, by the standards and guidelines. As BLM statewide policy, the standards and guidelines, will also directly guide development of the site-specific objectives and the methods and practices used to implement the land use plan decisions. Activity or implementation plans contain objectives that describe the site-specific conditions desired. Grazing permits/leases for the public lands contain terms and conditions that describe specific actions required to attain or maintain the desired conditions. Through monitoring and evaluation, the BLM, grazing permittees, and other interested parties determine whether progress is being made to achieve activity plan objectives.

Wyoming rangelands support a variety of uses that are of significant economic importance to the state and its communities. These uses include oil and gas production, mining, recreation and tourism, fishing, hunting, wildlife viewing, and livestock grazing. Rangelands also provide amenities that contribute to the quality of life in Wyoming, such as open spaces, solitude, and opportunities for personal renewal. Wyoming's rangelands should be managed with consideration of the state's historical, cultural, and social development and in a manner that contributes to a diverse, balanced, competitive, and resilient economy to provide opportunity for economic development. Healthy rangelands can best sustain these uses.

To varying degrees, BLM management of the public lands and resources plays a role in the social and economic well-being of Wyoming communities. The National Environmental Policy Act (part of the above-mentioned first planning tier) and various other laws and regulations mandate that the BLM analyze the socioeconomic impacts of actions occurring on public rangelands. These analyses occur during the environmental analysis process of land use planning (second planning tier), where resource allocations are made, and during the environmental analysis process of activity or implementation planning (third planning tier). In many situations, factors that affect the social and economic well-being of local communities extend far beyond the scope of BLM management or individual public land users' responsibilities. In addition, because standards relate primarily to physical and biological features of the landscape, it is very difficult to provide measurable socioeconomic indicators that relate to the health of rangelands. It is important that standards be realistic and within the control of the land manager and users to achieve.

STANDARDS FOR HEALTHY PUBLIC RANGELANDS

STANDARD #1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

THIS MEANS THAT:

The hydrologic cycle will be supported by providing for water capture, storage, and sustained release. Adequate energy flow and nutrient cycling through the system will be achieved as optimal plant growth occurs. Plant communities are highly varied within Wyoming.

INDICATORS MAY INCLUDE, BUT ARE NOT LIMITED TO:

- Water infiltration rates
- Soil compaction
- Erosion (rills, gullies, pedestals, capping)
- Soil micro-organisms
- Vegetative cover (gully bottoms and slopes)
- Bare ground and litter.

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #2

Riparian and wetland vegetation has structural, age, and species diversity characteristic of the stage of channel succession and is resilient and capable of recovering from natural and human disturbance to provide forage and cover, capture sediment, dissipate energy, and provide for groundwater recharge.

THIS MEANS THAT:

Wyoming has highly varied riparian and wetland systems on public lands. These systems vary from large rivers to small streams and from springs to large wet meadows. These systems are in various stages of natural cycles and may also reflect other disturbance that is either localized or widespread throughout the watershed. Riparian vegetation captures sediments and associated materials, thus enhancing the nutrient cycle by capturing and utilizing nutrients that would otherwise move through a system unused.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Erosion and deposition rate
- Channel morphology and floodplain function
- Channel succession and erosion cycle
- Vegetative cover
- Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.)
- Bank stability
- Woody debris and instream cover
- Bare ground and litter.

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #3

Upland vegetation on each ecological site consists of plant communities appropriate to the site that is resilient, diverse, and able to recover from natural and human disturbance.

THIS MEANS THAT:

To maintain desirable conditions and/or recover from disturbance within acceptable time frames, plant communities must have the components present to support the nutrient cycle and adequate energy flow. Plants depend on nutrients in the soil and energy derived from sunlight. Nutrients stored in the soil are used over and over by plants, animals, and microorganisms. The amount of nutrients available and the speed with which they cycle among plants, animals, and the soil are fundamental components of rangeland health. The amount, timing, and distribution of energy captured through photosynthesis are fundamental to the function of rangeland ecosystems.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Vegetative cover
- Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.)
- Bare ground and litter
- Erosion (rills, gullies, pedestals, capping)
- Water infiltration rates.

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

THIS MEANS THAT:

The management of Wyoming rangelands will achieve or maintain adequate habitat conditions that support diverse plant and animal species. These may include listed threatened or endangered species (U.S. Fish and Wildlife-designated), species of special concern (BLM-designated), and other sensitive species (State of Wyoming-designated). The intent of this standard is to allow the listed species to recover and be delisted, and to avoid or prevent additional species from becoming listed.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Noxious weeds
- Species diversity
- Age class distribution
- All indicators associated with the upland and riparian standards
- Population trends
- Habitat fragmentation.

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #5

Water quality meets state standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Water Act. BLM management actions or use authorizations will comply with all federal and state water quality laws, rules, and regulations to address water quality issues that originate on public lands. Provisions for the establishment of water quality standards are included in the Clean Water Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in Wyoming's Water Quality Rules and Regulations. The latter regulations contain Quality Standards for Wyoming Surface Waters.

Natural processes and human actions influence the chemical, physical, and biological characteristics of water. Water quality varies from place to place with the seasons, the climate, and the kind of substrate through which water moves. Therefore, the assessment of water quality takes these factors into account.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Chemical characteristics (e.g., pH, conductivity, dissolved oxygen)
- Physical characteristics (e.g., sediment, temperature, color)
- Biological characteristics (e.g., macro- and micro-invertebrates, fecal coliform, and plant and animal species).

STANDARD #6

Air quality meets state standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Air Act. BLM management actions or use authorizations will comply with all federal and state air quality laws, rules, regulations, and standards. Provisions for the establishment of air quality standards are included in the Clean Air Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in Wyoming Air Quality Standards and Regulations.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Particulate matter
- Sulfur dioxide

- Photochemical oxidants (ozone)
- Volatile organic compounds (hydrocarbons)
- Nitrogen oxides
- Carbon monoxide
- Odors
- Visibility.

BLM Wyoming Guidelines for Livestock Grazing Management

Timing, duration, and levels of authorized grazing will ensure that adequate amounts of vegetative ground cover, including standing plant material and litter, remain after authorized use to support infiltration, maintain soil moisture storage, stabilize soils, allow the release of sufficient water to maintain system function, and maintain subsurface soil conditions that support permeability rates and other processes appropriate to the site.

Grazing management practices will restore, maintain, or improve riparian plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site. Grazing management will maintain adequate residual plant cover to provide for plant recovery, residual forage, sediment capture, energy dissipation, and groundwater recharge.

Range improvement practices (instream structures, fences, water troughs, etc.) in and adjacent to riparian areas will ensure that stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform are maintained or enhanced. The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological and hydrological functions, wildlife habitat, and significant cultural, historical, and archaeological values associated with the water source. Range improvements will be located away from riparian areas if they conflict with achieving or maintaining riparian function.

Grazing practices that consider the biotic communities as more than just a forage base will be designed to ensure that the appropriate kinds and amounts of soil organisms, plants, and animals to support the hydrologic cycle, nutrient cycle, and energy flow are maintained or enhanced.

Continuous season-long or other grazing management practices that hinder the completion of plants' life-sustaining reproductive and/or nutrient cycling processes will be modified to ensure adequate periods of rest at the appropriate times. The rest periods will provide for seedling establishment or other necessary processes at levels sufficient to move the ecological site condition toward the resource objective and subsequent achievement of the standard.

Grazing management practices and range improvements will adequately protect vegetative cover and physical conditions and maintain, restore, or enhance water quality to meet resource objectives. The effects of new range improvements (water developments, fences, etc.) on the health and function of rangelands will be carefully considered before their implementation.

Grazing management practices will incorporate the kinds and amounts of use that will restore, maintain, or enhance habitats to assist in the recovery of federal threatened and endangered species or the conservation of federally listed species of concern and other state-designated special status species. Grazing management practices will maintain existing habitat or facilitate vegetation change toward desired habitats. Grazing management will consider threatened and endangered species and their habitats.

Grazing management practices and range improvements will be designed to maintain or promote the physical and biological conditions necessary to sustain native animal populations and plant communities. This will involve emphasizing native plant species in the support of ecological function and incorporating the use of

nonnative species only in those situations in which native plant species are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health.

Grazing management practices on uplands will maintain desired plant communities or facilitate change toward desired plant communities.

DEFINITIONS

ACTIVITY PLANS. Allotment management plans (AMP), habitat management plans (HMP), watershed management plans (WMP), wild horse management plans (WHMP), and other plans developed at the local level to address specific concerns and accomplish specific objectives.

COORDINATED RESOURCE MANAGEMENT (CRM). A group of people working together to develop common resource goals and resolve natural resource concerns. CRM is a people process that strives for win-win situations through consensus-based decision-making.

DESIRED PLANT COMMUNITY. A plant community that produces the kind, proportion, and amount of vegetation necessary for meeting or exceeding the land use plan/activity plan objectives established for an ecological site. The desired plant community must be consistent with the site's capability to produce the desired vegetation through management, land treatment, or a combination of the two.

ECOLOGICAL SITE. An area of land with specific physical characteristics that differs from other areas both in its ability to produce distinctive kinds and amounts of vegetation and in its response to management.

EROSION. (v.) Detachment and movement of soil or rock fragments by water, wind, ice, or gravity. (n.) The land surface worn away by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

GRAZING MANAGEMENT PRACTICES. Grazing management practices include such things as grazing systems (rest-rotation, deferred rotation, etc.), timing and duration of grazing, herding, salting, etc. They do not include physical range improvements.

GUIDELINES (For Grazing Management). Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management actions at the allotment and watershed level that move rangelands toward statewide standards or maintain existing desirable conditions. Appropriate guidelines will ensure that the resultant management actions reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. Guidelines, and therefore the management actions they engender, are based on sound science, past and present management experience, and public input.

INDICATOR. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles. An indicator can be evaluated at a site- or species-specific level. Monitoring of an indicator must be able to show change within time frames acceptable to management and be capable of showing how the health of the ecosystem is changing in response to specific management actions. Selection of the appropriate indicators to be observed, measured, or monitored in a particular allotment is a critical aspect of early communication among the interests involved on the ground. The most useful indicators are those for which change or trends can be easily quantified and for which agreement as to the significance of the indicator is broad based.

LITTER. The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetal material.

MANAGEMENT ACTIONS. Management actions are the specific actions prescribed by the BLM to achieve resource objectives, land use allocations, or other program or multiple use goals. Management actions include both grazing management practices and range improvements.

OBJECTIVE. An objective is a site-specific statement of a desired rangeland condition. It may contain either or both qualitative elements and quantitative elements. Objectives frequently speak to change. They are the focus of monitoring and evaluation activities at the local level. Monitoring of the indicators would show negative changes or positive changes. Objectives should focus on indicators of greatest interest for the area in question.

RANGE IMPROVEMENTS. Range improvements include such things as corrals, fences, water developments (reservoirs, spring developments, pipelines, wells, etc.) and land treatments (prescribed fire, herbicide treatments, mechanical treatments, etc.).

RANGELAND. Land on which the native vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs, or shrubs. This includes lands revegetated naturally or artificially when routine management of that vegetation is accomplished mainly through manipulation of grazing. Rangelands include natural grasslands, savannas, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows.

RANGELAND HEALTH. The degree to which the integrity of the soil and ecological processes of rangeland ecosystems are sustained.

RIPARIAN. An area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lakeshores and streambanks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not have vegetation dependent on free water in the soil.

STANDARDS. Standards are synonymous with goals and are observed on a landscape scale. Standards apply to rangeland health and not to the important by-products of healthy rangelands. Standards relate to the current capability or realistic potential of a specific site to produce these by-products, not to the presence or absence of the products themselves. It is the sustainability of the processes, or rangeland health, that produces these by-products.

TERMS AND CONDITIONS. Terms and conditions are very specific land use requirements that are made a part of the land use authorization to ensure maintenance or attainment of the standard. Terms and conditions may incorporate or reference the appropriate portions of activity plans (e.g., allotment management plans). In other words, where an activity plan exists that contains objectives focused on meeting the standards, compliance with the plan may be the only term and condition necessary in that allotment.

UPLAND. Those portions of the landscape that do not receive additional moisture for plant growth from run-off, stream flow, etc. Typically, these are hills, ridgetops, valley slopes, and rolling plains.

APPENDIX 11—WYOMING NATURAL DIVERSITY DATABASE SPECIES OF CONCERN

Table A11-1. Plant Species of Concern Potential Occurrence by County

Common Name	Scientific Name	Habitat	County
Meadow Pussytoes	*Antennaria arcuata*	Moist, hummocky meadows, seeps, or springs surrounded by sage/grasslands	Fremont, Sublette
Hayden's Milkvetch	*Astragalus bisulcatus, var. haydenianus*	Clay or sandy soils on rims, upper slopes, and draws associated with sandstone rock outcrops or springs	Fremont (?), Sweetwater
Moab Milkvetch	*Astragalus coltonii var. moabensis*	Not available	Sweetwater
Meadow Milkvetch	*Astragalus diversifolius*	Moist, often alkaline, meadows and swales in sagebrush valleys	Sweetwater (?)
Precocious Milkvetch	*Astragalus proimanthus*	Cushion plant communities on rocky, clay soils mixed with shale on summits and slopes of white shale hills	Sweetwater
Sickle Saltbush	*Atriplex falcata*	Sagebrush dominated mesas and gravel beaches with sandy to clayey soil	Sublette, Sweetwater
Wolf's Orache	*Atriplex wolfii*	Alkaline or clay soils, elevated mounds near aquatic sites, associated with greasewood	Sweetwater
White Fir	*Abies concolor*	South facing slopes on dry shallow soils; often found in the foothills and lower slopes of mountains	Sweetwater
Payson's Tansymustard	*Descurainia pinnata, var. paysonii*	Sandy flats and stabilized dunes with shrub cover	Sweetwater
Wyoming Tansymustard	*Descurainia torulosa*	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccia or sandstone	Fremont, Sweetwater
Uinta Draba	*Draba juniperina*	Primarily found in woodlands on sandy-clay gravelly soils with abundant cryptogamic crusts and needle duff; populations may also occur in grasslands on sandstones and at the edge of juniperus woodlands and semibarren cushion plant communities on white clay-sandy rims	Sweetwater
Nevada Needlegrass	*Achnatherum nevadense*	Pine and aspen woods near creek	Fremont
Swallen Mountain-Ricegrass	*Achnatherum swallenii*	Rocky slopes, rims, and mesa summits with sandy to gravely limey-clay soils covered with a lag surface of gravel	Sublette
Mystery Wormwood	*Artemisia biennis var. diffusa*	Clay flats and playas	Sweetwater
Crandall's Rockcress	*Boechera crandallii*	Rocky-sandy ridges in juniper woodlands	Sweetwater
Small Rockcress	*Boechera pusilla*	Crevices and sparsely vegetated, coarse granite soil in granite-pegmatite outcrops surrounded by sagebrush grassland	Fremont
Selby's Rockcress	*Boechera selbyi*	Sandy knolls, steep hillsides, among sagebrush or under junipers and pines, rocky slopes, base of sandstone cliffs, and chip-rock	Sweetwater

Table A11-1. Plant Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Little-leaved Brickell-bush	*Brickellia microphylla var. scabra*	Primarily crevices in sandstone outcrops at 5,600 to 6,750 feet; occasionally populations found on black clay and shale hills	Fremont, Sweetwater
Utah Mountain Lilac	*Ceanothus martinii*	Steep sagebrush slopes or mountain shrub and on shallow-stony or hard clay soils (often in areas that accumulate winter snow)	Sweetwater
Dwarf Mountain Mahogany	*Cercocarpus ledifolius var. intricatus*	Rocky slopes, sandstone outcrops, and sandy desert hills	Sweetwater
Fullstem	*Chamaechaenactis scaposa*	Sparsely vegetated calcareous clay barrens, rims and benches with a lag surface of shale flakes, or in dry washes on extremely fine clay shale	Sweetwater
Cedar Rim Thistle	*Cirsium aridum*	Barren slopes, fans, and draws on whitish-gray sandstone, chalk, or clay; mostly found in sparsely vegetated openings within Wyoming big sagebrush grasslands	Fremont, Sublette, Sweetwater
Ownbey's Thistle	*Cirsium ownbeyi*	Semibarren rims or steep slopes of broken gray slate below shale cliffs at 6,440 to 8,200 feet	Sweetwater
Slender cryptantha	*Cryptantha gracilis*	Course slate areas on slopes and in washes	Sweetwater
Rollins' Cat's-Eye	*Cryptantha rollinsii*	Cushion plant communities on ridgetops and slopes with sandy soils or sandstone slate flakes at 6,040 to 7,820 feet	Sweetwater
Western Dodder	*Cuscuta occidentalis*	Mountain big sagebrush communities	Sweetwater
Long-Awned Alkali Wildrye	*Elymus simplex var. luxurians*	Sparse stands along rivers, stream banks, lakeshores, ditches and roadsides, open prairie, and disturbed ground	Sweetwater
Wilcox Eriastrum	*Eriastrum wilcoxii*	Dry, open, often sandy places in the plains and foothills	Fremont, Sweetwater
San Rafael Daisy	*Erigeron compactus var. consimilis*	Windy, gravelly, sandstone ridgetops with thin, rocky soils	Sweetwater
Divergent Wild Buckwheat	*Eriogonum divaricatum*	Barren or semibarren clay, shale, or sandstone slopes in cushion plant-bunchgrass communities or on the fringes of sagebrush grasslands	Sublette, Sweetwater
Crisp-Leaf Wild Buckwheat	*Eriogonum corymbosum var. corymbosum*	Open rocky slopes and barren, dry, clay gypsum or sandy clay hills	Sweetwater
Hooker Wild Buckwheat	*Eriogonum hookeri*	Dry hills and shale and sandstone canyons	Sweetwater
Green Mormon Tea	*Ephedra viridis var. viridis*	Upland desert and foothill habitats, usually in sandy or rocky soil	Sweetwater
Dwarf Milkwood	*Asclepias uncialis*	Sandy or rocky prairies	Sweetwater (?)
Colorado Bedstraw	*Galium coloradoense*	Rocky sagebrush slopes and on sandstone ridges	Sweetwater
Utah Greasebush	*Glossopetalon spinescens var. meionandrum*	Montane lowlands	Sweetwater

Table A11-1. Plant Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Large-Fruited Bladderpod	*Lesquerella macrocarpa*	Gypsum-clay hills and benches, clay flats, and barren hills	Fremont, Sublette, Sweetwater
Sage-Like Loeflingia	*Loeflingia squarrosa var. artemisiarum*	Sandy desert soils under sagebrush cover	Sweetwater
Rufous-Spine Prickly-Pear	*Opuntia polyacantha var. rufispina*	Sagebrush grasslands, salt desert shrublands, and vegetated sand dunes on slopes and buttes	Sweetwater
Utah Old Man Prickly-Pear	*Opuntia erinacea var. utahensis*	Exposed, dry areas such as pinyon-juniper communities, sagebrush communities, rocky hills, mesa slopes, and desert scrub communities	Sweetwater
Saffron Groundsel	*Packera crocata*	Mid-elevation wet meadows, stream sides, and slopes	Sweetwater
Stemless Beardtongue	*Penstemon acaulis var. acaulis*	Primarily in sparsely vegetated openings within grasslands on low slopes, outwash fans, ridgetops, and flats	Sweetwater
Garrett's Beardtongue	*Penstemon scariosus var. garrettii*	Sparsely vegetated shale slopes at 5,000 to 6,800 feet.	Sweetwater
Red Poverty-Weed	*Monolepis pusilla*	Not available	Sweetwater
Tree-Like Oxytheca	*Oxytheca dendroidea*	Desert hills and sandy roadsides	Fremont, Sweetwater, Sublette (?)
Intermountain Phacelia	*Phacelia demissa*	Not available	Fremont, Sweetwater
Desert Glandular Phacelia	*Phacelia glandulosa var. deserta*	Semibarren south or west facing upper slopes of gray clay shale	Sublette, Sweetwater
Western Phacelia	*Phacelia incana*	Rocky or sandy-clay slopes	Sweetwater
Tiny Phacelia	*Phacelia tetramera*	Stabilized sand dunes and sandy terraces above rivers	Fremont, Sweetwater
Nelson's Phacelia	*Phacelia salina*	Alkaline flats and clay slopes	Sublette, Sweetwater
Little-Leaf Mock-Orange	*Philadelphus microphyllus var. occidentalis*	Arid rocky slopes, cliffs, and pinyon-juniper to coniferous woods	Sweetwater
Beaver Rim Phlox	*Phlox Pungens*	Slopes of limestone, volcanic-rich sandstone, siltstone, or red-bed clays	Fremont, Sublette
Tufted Twinpod	*Physaria condensata*	Dry rocky knolls and ridges, clay banks, and shaley hills	Sublette
Dwarf Ninebark	*Physocarpus alternans*		Sweetwater
Strict-Leaved Pondweed	*Potamogeton strictifolius*	Rooted in shallow water at edge of gently flowing rivers, lakes, or reservoirs	Sublette, Sweetwater (?)
Deep Creek Cinquefoil	*Potentilla multisecta*		Sweetwater
Dwarf Woolly-Heads	*Psilocarphus brevissimus*	Dried beds of vernal pools and flats below 3,000 feet; many plant communities especially in grasslands	Fremont, Sublette
Blue Elderberry	*Sambucus cerulean*	Typically, sunny areas along steam banks in open forests	Sweetwater
Many-Headed Broom Groundsel	*Senecio spartioides var. multicapitatus*	Stabilized sand dunes and hills	Sweetwater

Table A11-1. Plant Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Uinta Greenthread	*Thelesperma pubescens*	Cobbled soils, typically along the summit edges of relict surfaces that now stand as isolated "mountains"	Sweetwater
Cedar Mountain Easter-daisy	*Townsendia microcephala*	Exposed, west-facing upper slopes and ridges on shallow, sandy soils	Sweetwater

Keinath, B., B. Heidel and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Table A11-2. Mammal Species of Concern Potential Occurrence by County

Common Name	Scientific Name	Habitat	County
Fringed myotis	*Myotis thysanodes*	Elevations less than 7,500 feet in forests and shrublands	Fremont (?), Sublette, Sweetwater (?)
Yuma myotis	*Myotis yumanensis*	Caves, mines, buildings, and underside of bridges	Sweetwater, Fremont (?)
Spotted bat	*Euderma maculatum*	Desert and coniferous habitats	Fremont (?), Sublette (?), Sweetwater
Townsend's big-eared bat	*Corynorhinus townsendii*	Coniferous forest and desert shrubland	Fremont (?), Sublette (?), Sweetwater
Pallid bat	*Antrozous pallidus*	Desert shrubs; grassland basins and plains	Sweetwater
Pygmy rabbit	*Brachylagus idahoensis*	Big, dense sagebrush	Fremont, Sublette, Sweetwater
Cliff chipmunk	*Tamias dorsalis utahensis*	Rocky, steep hillsides	Sweetwater
Allen's thirteen-lined ground squirrel	*Spermophilus tridecemlineatus alleni*	Grasslands and desert grasslands	Fremont, Sublette
White-tailed prairie dog	*Cynomys leucurus*	Plains	Fremont, Sublette, Sweetwater
Wyoming pocket gopher	*Thomomys clusius*	Dry ridgetops; gravelly, loose soil; greasewood	Sweetwater
Idaho pocket gopher	*Thomomys idahoensis*	Stony, shallow soil	Sublette
Canyon mouse	*Peromyscus crinitus*	Pine or lodgepole	Sweetwater
Pinon mouse	*Peromyscus truei*	Less dense shrub steppe areas	Sweetwater
Water vole	*Microtus richardsoni*	High-elevation, slow-moving streams with overhanging banks	Fremont, Sublette
Gray wolf	*Canis lupus*	Extremely variable, densities being highest where prey biomass is highest	Fremont, Sublette (?)
Swift fox	*Vulpes velox*	Shortgrass prairie	Fremont, Sweetwater

Table A11-2. Mammal Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Grizzly bear	*Ursus arctos horribilis*	Variety, including dense riparian, mountain evergreen forests, and oak lowlands	Fremont, Sublette
Fisher	*Martes pennanti*	Coniferous forests	Fremont (?), Sublette
North American wolverine	*Gulo gulo luscus*	Near the tree line on the mountains	Fremont (?), Sublette
Canada lynx	*Lynx Canadensis*	Edge of boreal forests	Fremont, Sublette

Keinath, B., B. Heidel and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Table A11-3. Avian Species of Concern Potential Occurrence by County

Common Name	Scientific Name	Habitat	County
Common loon	*Gavia immer*	Wetlands and aquatic	Fremont, Sublette, Sweetwater
Clark's grebe	*Aechmophorus clarkia*	Wetlands and aquatic	Fremont
American bittern	*Botaurus lentiginosus*	Dense marsh	Fremont, Sweetwater
White-faced ibis	*Plegadis chihi*	Marshes and wet meadows	Fremont, Sublette, Sweetwater
Trumpeter swan	*Cygnus buccinator*	Wetlands and aquatic	Fremont, Sublette, Sweetwater
Harlequin duck	*Histrionicus histrionicus*	Wetlands and aquatic	Fremont, Sublette
Bald eagle	*Haliaeetus leucocephalus*	Rivers, lakes, marshes, and wetlands	Fremont, Sublette, Sweetwater
Northern goshawk	*Accipiter gentilis*	Coniferous and deciduous forests	Fremont, Sublette, Sweetwater
Ferruginous hawk	*Buteo regalis*	Riparian, shrubland, prairie and special features—areas having unique characteristics such as rock outcrops, caves, cliffs, shorelines, buildings, mines, roadsides, burns, and logging	Fremont, Sublette, Sweetwater
American peregrine falcon	*Falco peregrinus anatum*	Mountains, grassland, and desert	Sublette, Sweetwater
White-tailed ptarmigan	*Lagopus leucurus*	Riparian areas, meadows, and coniferous and deciduous forests	Fremont (?), Sweetwater (?)
Greater sage-grouse	*Centrocercus urophasianus*	Shrubland, meadows, and agricultural areas	Fremont, Sublette, Sweetwater
Whooping crane	*Grus Americana*	Salt flats and marshes, flooded crop fields, artificial ponds, reservoirs, and rivers	Fremont, Sublette, Sweetwater

Table A11-3. Avian Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Snowy plover	*Charadrius alexandrinus*	Wetlands and special feature areas having unique characteristics such as rock outcrops, caves, cliffs, shorelines, building, mines, roadsides, burns, and logging	Fremont, Sweetwater
Mountain plover	*Charadrius montanus*	High, dry, short-grass plains/prairies; sagebrush grasslands	Fremont, Sublette, Sweetwater
Long-billed curlew	*Numenius americanus*	Short-grass prairies; mixed-grass and scrub prairies	Fremont, Sublette, Sweetwater
Caspian tern	*Sterna caspia*	Wetlands and aquatic areas	Fremont
Forster's tern	*Sterna forsteri*	Large marshes, estuaries, and lake islands	Fremont
Black-billed cuckoo	*Coccyzus erythropthalmus*	Deciduous woodlands	Fremont
Yellow-billed cuckoo	*Coccyzus americanus*	Streamside deciduous woodland with low scrubby vegetation; cottonwood stands and willow thickets	Fremont, Sweetwater
Northern pygmy owl	*Glaucidium gnoma*	Open coniferous and mixed forests from valley bottoms up to treeline	Fremont
Short-eared owl	*Asio flammeus*	Grasslands, prairie, agricultural fields, salt marshes, and mountain meadows	Fremont, Sublette, Sweetwater
Burrowing owl	*Athene cunicularia*	Open, dry grasslands, agricultural fields and rangelands, and desert	Fremont, Sublette, Sweetwater
Great gray owl	*Strix nebulosa*	Coniferous and deciduous forests and prairies	Fremont, Sublette
Boreal owl	*Aegolius funereus*	Coniferous and deciduous forests	Fremont
Calliope hummingbird	*Stellula calliope*	High mountains near streams or lakes	Sublette
Lewis' woodpecker	*Melanerpes lewis*	Coniferous and deciduous forests and riparian areas	Fremont
Williamson's sapsucker	*Sphyrapicus thyroideus*	Coniferous or mixed deciduous/coniferous forests	Fremont, Sublette, Sweetwater (?)
Three-toed woodpecker	*Picoides tridactylus*	Coniferous and deciduous forests and special feature areas having unique characteristics such as rock outcrops, caves, cliffs, shorelines, buildings, mines, roadsides, burns, and logging	Fremont, Sublette, Sweetwater (?)
Loggerhead shrike	*Lanius ludovicianus*	Coniferous and deciduous forests and shrubland	Fremont, Sublette, Sweetwater
Western scrub-jay	*Aphelocoma californica*	Mesquite, scrub oak, pinyon pine, juniper, and thick low brush	Sweetwater

Table A11-3. Avian Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Juniper titmouse	*Baeolophus ridgwayi*	Coniferous and deciduous forests, shrubland, and special features, that is areas having unique characteristics such as rock outcrops, caves, cliffs, shorelines, buildings, mines, roadsides, burns, and logging	Fremont, Sweetwater
Bushtit	*Psaltriparus minimus*	Open deciduous and mixed woodlands	Sweetwater
Pygmy nuthatch	*Sitta pygmaea*	Ponderosa pine forest and other woodlands	Sublette
Virginia's warbler	*Vermivora virginiae*	Mountain slopes of dense-growth aspen, pine, and oak	Sweetwater, Sublette (?)
Black-throated gray warbler	*Dendroica nigrescens*	Semiarid woodlands; dry, open forest	Fremont, Sweetwater
Sage sparrow	*Amphispiza belli*	Basin-prairie shrub and mountain-foothill shrub	Fremont, Sublette, Sweetwater
McCown's longspur	*Calcarius mccownii*	Short-grass prairie and arid plains	Fremont, Sweetwater
Chestnut-collared longspur	*Calcarius ornatus*	Prairie, shrublands, and agricultural areas	Fremont
Bobolink	*Dolichonyx oryzivorus*	Prairies and meadows	Fremont
Scott's oriole	*Icterus parisorum*	Desert grassland prairies	Sweetwater
Black-rosy finch	*Leucosticte atrata*	Mountain meadows and shrublands	Fremont, Sublette, Sweetwater

Keinath, B., B. Heidel and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Table A11-4. Fish and Amphibian Species of Concern Potential Occurrence by County

Common Name	Scientific Name	Habitat	County
Fish			
Humpback chub	*Gila cypha*	Deep, fast-moving, turbid waters often associated with large boulders and steep cliffs	Sweetwater
Roundtail chub	*Gila robusta*	Warm streams and larger rivers, usually in habitats with slow-flowing water adjacent to areas of faster water	Sublette, Sweetwater
Bonytail chub	*Gila elegans*	Swift channels of large, turbid rivers	Sweetwater
Colorado River squawfish	*Ptychocheilus lucius*	CO River drainage; large rivers with strong-to-moderate current, deep pools, eddies, riffles, swift runs, and quiet backwaters	Sweetwater
Kendall Warm Springs dace	*Rhinichthys osculus thermalis*	Kendall Warm Springs	Sublette

Table A11-4. Fish and Amphibian Species of Concern Potential Occurrence by County (Continued)

Common Name	Scientific Name	Habitat	County
Bluehead sucker	*Catostomus discobolus*	CO River drainage, from headwaters streams to river; prefers moderate-to-high water velocity and rock substrate	Sublette, Sweetwater
Flannelmouth sucker	*Catostomus latipinnis*	CO River drainage; deep pools of slow-flowing, low-gradient reaches	Sublette, Sweetwater
Razorback sucker	*Xyrauchen texanus*	Deep, clear-to-turbid waters of large rivers and some reservoirs over mud, sand, or gravel	Sweetwater
Yellowstone cutthroat trout	*Oncorhynchus clarki bouvieri*	Clear, cold streams, rivers, and lakes	Fremont, Sublette
Fine-spotted Snake River cutthroat trout	*Oncorhynchus clarki*	Cool water at temperatures less than 59 degrees F and a high dissolved oxygen level; preference for streams but also found in lakes	Fremont, Sublette
Colorado River cutthroat trout	*Oncorhynchus clarki pleuriticus*	Clean, cool mountain streams of moderate gradient	Sublette, Sweetwater
Amphibians			
Boreal western toad	*Bufo boreas boreas*	Water sources in subalpine and alpine areas	Fremont, Sublette
Great Basin spadefoot toad	*Spea intermontana*	Soft sandy/gravelly soils near permanent or temporary bodies of water	Fremont, Sweetwater
Northern leopard frog	*Rana pipiens*	Shallow ponds and vegetated coves of lakes	Fremont, Sublette, Sweetwater
Columbia spotted frog	*Rana luteiventris*	Lakes, ponds, slow streams, and marshes	Fremont, Sublette

Keinath, B., B. Heidel and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Table A11-5. Reptile Species of Concern Potential Occurrence by County

Common Name	Scientific Name	Habitat	County
Northern plateau lizard	*Sceloporus undulatus elongatus*	Sunny locations: favors rotting logs, open woodlands, open grassy dunes, prairies	Sweetwater
Tree lizard	*Urosaurus ornatus*	Trees, rocks, fence posts, and buildings in arid regions; often near streams and dry washes.	Sweetwater
Rubber boa	*Charina bottae*	Moist and dry pine forest, and shrubby habitats; most common where moisture, such as streams or moist soil, are underground	Fremont, Sublette
Midget faded rattlesnake	*Crotalus viridis concolor*	Rocky, arid areas to 8,000 feet	Sweetwater

Keinath, B., B. Heidel and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

APPENDIX 12—DRAFT TRANSPORTATION PLAN

PURPOSE

This transportation plan provides direction for future road development and use in the Jack Morrow Hills (JMH) planning area and provides a basis for future exploration, development, and production transportation activities, including oil- and gas-related activities, within the planning area. Information on existing road networks and potential impacts to the existing transportation system are described in the final Environmental Impact Statement (EIS) for the JMH Coordinated Activity Plan (CAP).

The transportation planning area includes the planning area plus adjacent areas that include roads that may be used to access the planning area (Map 65). The transportation planning area includes U.S. Highway 191; Wyoming Highway 28; and several county, Bureau of Land Management (BLM), and undeveloped roads/routes within and adjacent to the area.

The use of existing roads and proposed road corridors for local and collector roads would be described in a Transportation Planning Technical Support Document developed for specific projects. Applicable transportation standards would be used in the localized planning efforts for each new well location, new facility, and associated access. Annual operational updates to the technical support document would be provided, as necessary, to detail specific localized transportation networks. All new or upgraded roads in the transportation planning area would conform to the general provisions of the technical support document.

A technical support document also outlines the procedures for site-specific application of transportation plan development in relation to specific projects and activities. A project application would initiate preparation of a site-specific transportation plan. Procedures for developing this plan would include—

- Identifying the geographic area involved with the transportation plan
- Identifying the existing road network and types of roads within this geographic area
- Identifying the transportation needs for the project proposal
- Notifying the public of the proposal and obtaining input from users and interested public
- Identifying the resources and issues of concern in relation to the project proposal
- Identifying the JMH CAP objectives and actions that would guide transportation plan development
- Applying the measures listed below.

The contents of this transportation plan are listed.

The issues and concerns raised during scoping and public workshops are identified.

Existing roads in the transportation planning area that are preliminarily identified as potential project required collector and local roads are identified on maps. Resource, two-track, and other unimproved roads are also briefly discussed.

SCOPE

The scope of this transportation plan includes a brief description/presentation of the existing road network (Map 65, JMH CAP), and the identification of proposed high-traffic volume roads/corridors. Relevant requirements for road construction or reconstruction and the development of agreements for use, rights-of-way (ROW), and maintenance are identified and outlined in a technical support document.

This transportation plan also applies to the transportation of gas, condensate, or water via pipelines and electric power transmission (buried power lines) within the planning area. Pipelines and buried power lines generally would be located adjacent to roads to reduce new surface disturbance. In some instances, paralleling roads and lines may lead to increased environmental impacts, in which case pipelines and power lines may be located along alternative routes, and these alternative routes would evaluated and sited to minimize environmental impacts.

Some existing roads to and within the planning area are under jurisdiction of the governmental agencies (e.g., BLM, state, Sweetwater County) that approved their designs and require their maintenance. Roads across private lands would require an easement between the operator and private landowner. Private easements may not have maintenance requirements or agreements. In addition, there are many non-facility (oil and gas) roads/routes that are not maintained. Map 65 in the final EIS for the JMH CAP illustrates the general location of roads in the area. Oil and gas field roads may also be under the jurisdiction of government agencies; however, maintenance of these roads would generally be conducted by operators. Maintenance responsibilities are discussed in the transportation plan for specific projects. Operators would provide the BLM and county officials with copies of road maintenance agreements that include the name of the operators' designated contact person. Non-oil and gas roads would be maintained as appropriate by the BLM or other ROW holder.

Access Road Limitations

The condition (e.g., road design, upgrading requirements) and maintenance status (e.g., plowed) of existing roads and casual use routes (e.g., two tracks) in the transportation planning area are generally identified on maps available for review with the technical support document at the BLM offices. Existing collector roads that extend into parts of the planning area have been upgraded to meet minimum road standards. Some existing roads may not be passable during inclement weather or during winter months. All additional roads developed and required for this project would need to be upgraded, maintained, and, where applicable, would require winter snow removal. Some roads would remain closed after snow accumulations close them. Specific road upgrading, snow removal, and maintenance responsibilities would be identified in annual operational updates to a technical support document.

Some existing two-track or other roads within the transportation planning area may not have public access agreements in place with the BLM, state, and/or private landowner. Except those identified as state or county roads, access may require agreements with private landowners.

The transportation network described in this document is focused on local and collector roads and potential road corridors.

The Existing Network

U.S. Highway 191 and Wyoming Highway 28 are the primary paved accesses to the planning area. From these highways, unpaved county road access (gravel, aggregate surfaced) is provided by the Superior Cutoff Road (#4-18), Eden Area Roads (#4-12), Chilton Road (#4-17), Freighter Gap Road (#4-83), Bar X Road (#4-21), Oregon Buttes Road (#4-74 and #10-446), and Nine Mile Road (#4-15). Other improved roads providing access to the planning area include the Tri-Territory Road (BLM roads #4102 and #4115). Most of these roads have some degree of gravel or aggregate surface and are periodically maintained. Some of these unpaved roads become impassable when wet and during winter, and, if these roads were used as access for this project, they would require improvements and increased maintenance including snow removal. County roads (arterial roads) are maintained, but in many cases there is no snow removal. County roads provide public access across private land; however, BLM roads or other roads that cross private lands may not have

legal public access across them. The Superior Cutoff, Chilton, and Bar X County Roads would receive high-volume traffic with implementation of the JMH CAP. The BLM and county roads require ROW for access and may require improvement or reconstruction before project use. In addition, some realignment of these routes may be necessary to minimize impacts to sensitive resources, ensure safety, and maximize traffic flow efficiency. Map 65 shows the existing and proposed locations of high-volume roads and/or corridors within the planning area (i.e., arterial roads and other potential collector and local roads routes with high initial traffic volumes).

Four classifications of roads are associated with development, particularly well field development: arterial, collector, local, and resource. The definition of each follows.

- **Arterial Roads**—These are state highways or county roads that provide primary access to the project area. These roads are high-traffic volume roads.

- **Collector Roads**—These are BLM roads that provide primary access to large blocks of land and connect with or are extensions of a public road system. Collector roads accommodate mixed traffic and serve many uses. They receive the highest traffic volume of all the roads in the BLM road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the BLM.

- **Local Roads**—These roads occur mostly on BLM-administered lands, and normally serve a smaller area than collector roads, and connect to collectors of the public road system. In the planning area, these are two-lane or single-lane roads with inter-visible turnouts that provide the internal access network to multiple well locations within the natural gas field. Local roads receive lower volumes of traffic, carry fewer traffic types, and generally serve fewer uses. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by terrain, may be single-lane roads with turnouts. Environmental impacts from construction of local roads would be reduced through road designs for the steeper grades, sharper curves, and lower design speeds.

- **Resource Roads**—These roads occur mostly on BLM-administered lands and normally are spur roads that provide point access and connect to local roads or collector roads. In the planning area, these are the single-lane roads to the individual well location. They carry very low-volume traffic and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing BLM costs, with minimal consideration for user cost, comfort, or travel time.

Additional new access roads would be constructed as specified in the annual operational updates to a technical support document. Where these new roads duplicate existing two-track roads/routes, the existing two-track roads may be reclaimed. At project or field abandonment, many newly constructed local and resource roads would be reclaimed unless there is an identified need for the road by other area users. Reclamation activities would be addressed during annual planning and corresponding updates to a technical support document.

The existing transportation network within the planning area is generally shown on Map 65, and roads/routes are briefly described in a technical support document. This system includes state, county, and BLM access roads. Historic use of the roads has been primarily by livestock operators, recreationists, and mineral developers. This mix would continue with a substantial increase in development (particularly mineral development-related) traffic.

In the future, two-track roads/routes may also be used to access the area. These routes presently are used primarily by grazing permittees and recreationists. Grazing permittees use the routes to access water developments and other range improvements. Recreationists use the routes for hunting, sightseeing, rock hounding, and wildlife and wild horse viewing.

There are several pipelines in the area to transport the natural gas from the project area to processing plants for transport to markets. Further detailed information regarding the location of pipelines within the planning area can be found on the detailed maps available for review with a technical support document located in the Rock Springs Field Office.

PROPOSED NETWORK USE/MODIFICATION

The traffic flow transition stages of a typical trip into the planning area transportation system are as follows:

- Travel via U.S. 191 or Wyoming 28 to project area arterial or collector road turnoff (e.g., workers, supply trucks, drill rigs with destinations within the well field).
- Transition from arterial or collector road to local and/or resource road to access a well site or central production facility destination.

TRANSPORTATION WITHIN THE CORE AREA

Specific guidelines for transportation in the core area are presented in the following paragraphs.

Greater Sand Dunes ACEC

Roads, pipelines, or other ROW would not be built in the relatively pristine portion of the eastern area (approximately 8,800 acres), including the base of Steamboat Mountain.

Road construction and new access would be allowed only on existing access and ROW. New pipelines would follow existing pipeline corridors. Alternative access methods, such as helicopters and freezing water on active dunes, could be used as long as conflicts with big game or values associated with areas of critical environmental concern (ACEC) can be avoided.

New linear facilities such as pipelines and power lines in areas of ongoing development may be laid on the surface, or buried adjacent to access roads or within existing concentration areas containing such lines. Pipelines in the stabilized dune areas would be installed as surface lines to avoid unnecessary disturbance of vegetation. Operators would monitor surface gas pipelines to identify potential hazards to off-highway vehicle (OHV) users. Identified hazards would be marked to improve visibility.

Any proposed activity or use that involves surface disturbance would require appropriate engineering design, geotechnical analysis, and mitigation planning.

Abandoned pipelines and other unnecessary facilities (e.g., snow fence) in unstabilized dune areas would be removed.

Plowing of snow would be restricted on BLM-administered roads.

Steamboat Mountain ACEC

Roads, pipelines, and other ROW would be allowed on the Box Canyon Road. The Box Canyon route would allow access to those areas leased on Steamboat Rim. Pipelines and other linear facilities would be placed above ground following the Box Canyon access route. Remote control operations and centralizing locations for condensate would be used to minimize impacts from human disturbance in the parturition and crucial winter periods. The locations of these facilities should be close to the Freighter Gap Road.

Roads, pipelines, and other ROW would be allowed from the Freighter Gap Road up LaFonte and Johnson Canyons to where the last producing well is located. These developments would not connect to the road and facilities on Steamboat Rim to minimize fragmentation of habitats and protect parturition and crucial winter grounds. Remote control operations and centralizing locations for condensate would be used to minimize impacts from human disturbance in the parturition and crucial winter ranges. These locations should be close to the Freighter Gap Road.

Because of safety and resource concerns, industry traffic would not be allowed on the switchback on BLM Road # 4012, Tri-Territory Road. Access into Blind Canyon and Jack Morrow Creek would be from the north side of the Freighter Gap Road near Bush Rim.

Plowing of snow would be restricted on BLM-administered roads. Winter access would be restricted to ensure protection of sensitive resources.

White Mountain

Access to White Mountain would be from U.S. Highway 191, using the existing route to the communication site. Pipelines and other ROW would be placed on the surface to minimize impacts to crucial wildlife habitats. Condensate tanks should be centralized to minimize trips to well locations during crucial winter periods.

Pipelines and any other new disturbance would avoid Native American respected places.

Plowing of snow would be restricted on BLM-administered roads. Winter access would be restricted to ensure protection of sensitive resources.

General Area

Access to these areas would generally follow county roads. Plowing of snow would be restricted on BLM-administered roads.

Development of transportation plans would include coordination with commodity users and other appropriate entities. These parties could include BLM and the JMH CAP working group; operators; State of Wyoming; Fremont, Sublette, and Sweetwater Counties; private landowners; permittees; recreational users; the general public. Outreach opportunities would be provided through meetings, mailings, press releases, etc., to solicit input into transportation plans, identify issues to be addressed, provide solutions, and help develop the framework and design for transportation plans.

APPENDIX 13—HYDROCARBON OCCURRENCE AND DEVELOPMENT POTENTIAL REPORT DEVELOPMENT SCENARIOS FOR MANAGEMENT ALTERNATIVES: 2002 TO 2021 JACK MORROW HILLS COORDINATED ACTIVITY PLAN

Introduction to the Fluid Mineral Planning Process

This Hydrocarbon Occurrence and Development Potential Report (HODP) considers current management, past hydrocarbon development, relevant research on fluid hydrocarbon potential, and industry-supplied information to evaluate the potential range of impacts on oil, gas, and coalbed methane development related to management actions for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP). The planning area has existing oil and gas production and undeveloped leases that are currently held by operators. The assessment of impacts on oil, gas, and coalbed methane development is based on the production history of the area, geologic factors that control the presence of hydrocarbon resources, and management decisions that impact development activities, including—

- Occurrence of hydrocarbon source rocks, reservoir rocks with adequate porosity/permeability, and potential for accumulation of economically recoverable hydrocarbon accumulations in structural and stratigraphic traps
- Distribution of coal-bearing formations with cumulative coal seam thickness at shallow depths
- Management actions that may be implemented to protect resources and land uses, including closing areas to leasing, placing stipulations on new lease offerings, and resource protection requirements that may be required for site-specific development permits
- Market conditions and technical factors that may impact exploration and development activity due to changes in production costs, commodity prices, and feasibility of development and resource protection activities.

The Reasonably Foreseeable Development (RFD) Analysis prepared by BLM's Wyoming Reservoir Management Group in Casper represents the most likely projection of exploration and development activity for the planning area, based on current knowledge of hydrocarbon potential, BLM resource management requirements, and market conditions (Stilwell 2002). To evaluate the range of potential impacts on hydrocarbon development for the alternatives considered for the Environmental Impact Statement (EIS) for the JMH CAP, this study compares the RFD projections for development in the planning area to possible development levels that may occur under the various planning options. To fully evaluate the degree of impacts on hydrocarbon development that are related to the management alternatives, this report makes several assumptions to control for factors that impact development levels that are based on BLM actions, including—

- Stable commodity prices are favorable for continued oil and gas development in southwestern Wyoming throughout the planning period.
- Market accessibility will be provided for any significant new discoveries in the planning area, including regional pipeline capacity, and sufficient gathering and gas treatment capacity.
- Development of new trends within the planning area are considered independent events, and risk factors are not compounded to assess the cumulative probabilities of multiple discoveries.

For the Green River Resource Area Resource Management Plan (RMP) (1996) and final EIS the potential for oil and gas development for the entire resource area was assessed. Areas of high, moderate, and low potential for oil and gas accumulation were identified for projecting the expected oil-and-gas-related activity for the period 1990 through 2010. Comments received on the draft EIS for the JMH CAP and new information received during the scoping for the supplemental draft EIS for the JMH CAP were used to update the development activity estimates. Several adjustments have been made to the development potential boundaries assigned within the planning area. The revised development potentials are shown on Map A13-1. The development potential boundaries have been modified to exclude areas where no development activity is projected for the planning period. The unleased parts of the wilderness study areas (WSA) have been excluded because hydrocarbon development in the unleased parts of WSAs may not occur until congressional action has been taken to resolve their status.

The area of high development potential in the JMH CAP planning area has been enlarged from the previous evaluation for the draft EIS (Map 69). It has been expanded to the north, based on the successful discovery at the Buccaneer Unit #1 well (Section 23, T26N, R102W) and Shell Exploration & Production Company's Pacific Creek Federal B3-33 (Section 33 T27N, R103W), which is just outside the northwestern boundary of the JMH CAP planning area. Additional projected development activities between these two discoveries would expand the high potential area within the central portion of the planning area. Moderate and low development potential boundaries have been altered to correspond to the change in the high potential. Although drilling may occur in the high, moderate, and low development potential areas, most of the activity is expected to occur in the high development potential area.

EXPLORATION AND DRILLING

Previous oil and gas activity within the planning area has been undertaken to explore for and produce oil and gas resources. Oil and gas exploration in the JMH CAP planning area has occurred primarily through designation of Federal Exploratory Units. To date, 53 units have been approved or proposed. Table A13-1 lists Federal Exploratory Units known to have been located entirely or partially within the limits of the JMH CAP planning area. The locations of the five currently producing units and three non-producing (suspended) exploratory units are shown on Map A13-2. Maps A13-1 and A13-3 show the locations of oil and gas wells and abandoned wells drilled in the JMH CAP planning area, based on data from IHS Energy Group, BLM records, and the Wyoming Oil and Gas Conservation Commission. Most drilling activity has been concentrated in the south-central part of the planning area, with most of the productive wells located in the Nitchie Gulch field. A few additional producing wells and most abandoned wells are scattered across the rest of the area. The production occurs primarily along the crest of the Rock Springs Uplift, a regional geologic structure in the Green River Basin.

Early Exploration Activity

Geologic structures with mappable surface expression in Wyoming were generally located and tested through the 1940s. In the JMH CAP planning area, the only geologic structures that were early exploration targets occur along a fault system on the northern edge of the planning area. Several exploration wells were drilled to test this structural trend, but none were productive. The first test well in the planning area was drilled in 1927, in Section 16 T23N, R104W. It was a shallow (1,529 feet) Mesaverde Group dry hole drilled by Boars Tusk Oil Company, which is now defunct. Two additional nonproductive shallow Tertiary-age tests were made in the north part of the planning area in the 1940s. The first exploratory unit in this part of the planning area was the Pacific Creek unit in 1943. No economic oil and gas accumulations were discovered in this Mesaverde Group test and the unit was terminated in 1947.

After the Pacific Creek unit test, 11 more units were approved and one was proposed and later withdrawn prior to drilling. Of these exploration units only the Nitchie Gulch test found commercial accumulations of oil and gas. The Nitchie Gulch unit/field is a combination stratigraphic-structural trap, producing primarily gas from the Frontier and Dakota formations. Exploration activity was limited in the JMH CAP planning area during this early period, because the area was thought to be gas prone and market conditions favored exploration for oil during that time.

Discovery and Development, 1961–1993

Hydrocarbons were first encountered in the El Paso Natural Gas Company (now defunct) well drilled in 1954 in Section 29 T25N, R103W. This well tested gas in a number of zones in the Upper Cretaceous strata, with a maximum recovery of 240,000 cubic feet of gas per day from one zone before the well was abandoned. An additional 12 wells were drilled and abandoned before the first economic well was completed in November of 1961. Trigood Oil Company (now defunct) completed the first economic well in Section 17 T23N, R103W. Gas and some condensate (light oil) were obtained from both the Frontier and Dakota formations. This was the discovery well for the Nitchie Gulch unit/field. Between 1970 and 1984, 30 exploratory units were approved in the planning area. This period of increased exploratory activity coincided with a nationwide peak in drilling activity, mainly due to price increases for oil and gas. Hydrocarbons were found in 8 of the 30 new units (Table A13-1). Four units became significant producers. The Buccaneer, Rim Rock, Steamboat Mountain, and Treasure units are still producing. These accumulations are associated with stratigraphic traps that produce primarily gas and some natural gas liquids, also known as condensate.

No exploratory units were proposed for a 10-year period after the Essex Mountain unit terminated in 1984. This was partially due to decreasing oil and gas prices and generally low gas production volumes from many of the units other than Nitchie Gulch unit/field. In addition, the area available for exploration and development in the planning area was reduced during this time period, due to the designation of WSAs and other limitations placed on development activities. No additional areas have been offered for lease in the core area since 1992, and leasing was suspending in the rest of the planning area in 1998. Where requested by the operator, leases in the core area are held in suspension until the completion of the JMH CAP.

Recent Units

During the 1994 to 1998 period, increased emphasis on gas exploration in the region resulted in the proposal of nine exploration units. Also, discoveries southwest of JMH CAP planning area at the Stagecoach Draw and Clay Buttes fields and to the east and southeast in the Great Divide Basin increased exploration interest in the planning area. Recent exploratory unit targets have been potential gas accumulations hosted in stratigraphic traps of Cretaceous-aged strata.

Within the JMH CAP planning area, the first test of the Big Bear unit produced oil from the Rock Springs Formation. The unit was terminated due to uneconomic production rates. The Northern Lights and Jack Morrow Creek units were proposed but never received final approval.

The following three terminated exploratory units were located partly within the JMH CAP planning area, and the first well for each of these units was drilled outside the planning area:

- The Riva unit extended into the eastern part of the planning area and was terminated in June 1995. The operator tested and abandoned a Lewis Shale well in Section 36 T25N, R98W.

- The Encore unit extended into the southeastern part of the planning area and was terminated in February 1998. The operator tested and abandoned the Almond, Lewis, and Ericson formations in Section 32 T24N, R99W.
- The Jade unit was located partly in the eastern part of the planning area and was terminated in July 1998. The exploration targets were the Almond and Lewis formations. The first well was completed as a Lewis producer in Section 11 T24N, R98W. The unit was terminated as a result of uneconomic gas production rates.

The following three non-producing (suspended) exploratory units lie within the JMH CAP planning area:

- Johnson Gap (Deep) unit was approved in 1994. The first well has been proposed in Section 1 T23N, R103W.
- West 187 unit was approved in 1998. The first well has been proposed in Section 25 T23N, R105W.
- Gold Coast unit was approved in 1998 and the first test well produces from the Almond Formation and was completed in 1999.

Each of the three above exploratory units has been granted a Suspension of Operations and Production until the JMH CAP environmental analysis can be completed.

The Greasewood Wash coalbed methane unit partially extends into the JMH CAP planning area. Details for testing of this unit are discussed in Section 2.5.

Of the 53 total units, five older units are still productive; five contained productive wells, but they did not produce in economic quantities and those units have been terminated; Gold Coast is productive, but additional exploratory activity is suspended; 36 did not find hydrocarbons or economic amounts, and were terminated; four were withdrawn or canceled; and two units are suspended, awaiting completion of the JMH CAP EIS.

Table A13-1. Federal Exploratory Units

Unit Name	Effective Date	Status	Termination Date	Acres	Exploration Targets	Trap Type	Producing Formation
Big Bear	19950531	Productive Terminated	19960725	25,625	Lance, Lewis, Mesaverde, Frontier, and Dakota	Stratigraphic	Rock Springs
Big Dune	19590121	Terminated	19620501	17,675	Fort Union, Lewis, and Almond	Stratigraphic	
Boars Tusk	19790625	Productive Terminated	19861009	11,520	Frontier and Dakota	Stratigraphic	Frontier and Dakota
Buccaneer	19801216	Productive		12,160	Fort Union, Lance, and Mesaverde	Stratigraphic	Dakota
Centurion	19810428	Terminated	19810716	24,988	Lewis	Stratigraphic	
Circle Bar	19710115	Terminated	19720613	56,877	Lewis and Mesaverde	Structural closure against Continental fault	
Citation	19811130	Terminated	19820517	24,949	Mesaverde	Stratigraphic	
Continental Peak	19820617	Terminated	19820827	12,813	Granite Wash	Structural, near Continental Fault	
Dickie Springs	19700428	Terminated	19701215	13,074	Mesaverde	Structural closure against Continental fault	
Eden	19720818	Terminated	19750901	39,127	Tertiary and Mesaverde	Stratigraphic with fault control	
Encore	19970325	Terminated	19980217	4,407	Lewis, Almond, and Ericson	Stratigraphic	
Essex Mountain	19840506	Productive Terminated	19841018	10,116	Frontier	Stratigraphic	Frontier
Freighter Gap	19810209	Productive Terminated	19870711	24,656	Rock Springs	Stratigraphic	Mowry
Gold Coast	19980130	Exploratory Suspended		25,585	Confidential	Stratigraphic	
Greasewood Wash	1995	Exploratory Terminated	20011221	4,750	Rock Springs	Coalbed methane	
Greater Pacific Creek	19780310	Terminated	19801001	31,338	Frontier, Dakota, Nugget, Phosphoria, Tensleep, and Madison	Structural closure	
Harris Slough	19800812	Terminated	19810715	24,983	Lewis	Stratigraphic	
Honeycomb Buttes	19790329	Terminated	19800403	24,969	Mesaverde	Unknown	
Hourglass	19800530	Terminated	19810528	24,453	Mesaverde	Stratigraphic	
Indian Gap	19550916	Terminated	19580301	19,826	Nugget	Unknown	
Jack Morrow Creek		Exploratory Proposed		24,921	Confidential	Confidential	

Table A13-1. Federal Exploratory Units (Continued)

Unit Name	Effective Date	Status	Termination Date	Acres	Exploration Targets	Trap Type	Producing Formation
Jade	19970219	Productive Terminated	19980701	19,034	Lewis and Almond	Overpressured stratigraphic	Lewis
Johnson Gap (Deep)	19940228	Exploratory Suspended		25,970	Confidential	Stratigraphic	
Lost Valley	19780807	Productive Terminated	19851130	40,371	Lewis	Stratigraphic	Mesaverde
Monument Draw	19810917	Terminated	19811229	13,389	Granite Wash	Structural closure	
Monument Ridge	19630529	Terminated	19640201	31,644	Lewis and Rock Springs	Stratigraphic	
Morrow Creek	19541112	Terminated	19560701	25,126	Mesaverde	Structural (seismic) closure against fault	
Morrow Creek	19590917	Terminated	19600501	8,160	Lewis and Mesaverde	Stratigraphic/Structural	
Morrow Creek	19660624	Terminated	19680201	79,301	Almond	Stratigraphic	
Musketeer	19810630	Terminated	19820517	23,626	Mesaverde	Stratigraphic	
Nitchie Gulch	19621001	Producing		7,154	Frontier and Dakota	Stratigraphic/Structural	Frontier and Dakota
Northern Lights		Withdrawn		26,908	Confidential	Confidential	
Oasis	19831227	Terminated	19840515	24,677	Morrison	Stratigraphic	
Oregon Trail	19460000	Terminated		15,000	Unknown	Structural closure against Continental fault	
Pacific Creek	19430527	Terminated	19471231	23,036	Mesaverde	Structural closure against Continental fault	
Pacific Creek	19590113	Withdrawn	19610414	27,514	Mesaverde	Structural closure	
Pacific Creek II	19730927	Terminated	19750723	15,939	Ericson	Structural closure	
Packsaddle	19790227	Terminated	19790730	24,779	Frontier	Stratigraphic	
Packsaddle Canyon		Cancelled	19821015	24,927	Frontier	Stratigraphic	
Parnell Creek	19611103	Terminated	19620501	26,183	Almond	Stratigraphic	
Pinnacles	19670321	Terminated	19680601	150,024	Lewis and Almond	Stratigraphic	
Pirate	19801031	Terminated	19810227	10,165	Mesaverde	Stratigraphic	
Plunge	19600311	Terminated	19620801	21,087	Almond	Unknown	
Rim Rock	19800229	Producing		24,816	Frontier	Stratigraphic	Dakota
Riva	19941202	Terminated	19950622	13,179	Lewis	Stratigraphic	
Rock Cabin	19800627	Terminated	19820328	15,336	Lewis, Mesaverde, and Frontier	Stratigraphic	
Saddle Bag	19810528	Terminated	19821024	26,083	Rock Springs	Stratigraphic	
Sands of Time	19830311	Terminated	19830519	24,879	Lewis	Stratigraphic	
Scotty Lake	19781102	Terminated	19800721	23,240	Lewis	Stratigraphic	

Table A13-1. Federal Exploratory Units (Continued)

Unit Name	Effective Date	Status	Termination Date	Acres	Exploration Targets	Trap Type	Producing Formation
South Pass	19810323	Terminated	19830624	24,920	Lewis	Structural closure	
Steamboat Mountain	19780418	Producing		14,132	Frontier	Stratigraphic	Frontier
Treasure	19790620	Producing		24,797	Lewis	Stratigraphic	Dakota
West 187	19980225	Exploratory Suspended		4,493	Confidential	Confidential	

Drilling History

Oil and Gas Wells in Jack Morrow Hills

A total of 156 wells have been drilled, with four of those testing coalbeds. Of these wells, 66 were completed as producing wells. Two of the completed wells produce coalbed methane. The coalbed methane wells were tested, but neither has been put into production. The remaining 90 wells drilled in the planning area were abandoned. One of the wells was later converted to a water injection well.

Previous drilling targets have primarily been formations of Cretaceous age with 148 of the 156 wells drilled testing or completed in these zones. Only two wells have tested formations deeper than the Cretaceous. The Eden Unit #5-11 in Section 11 T22N, R105W was proposed as a test of Mississippian-age rocks at a depth of 19,500 feet. The well was drilled to a total depth of 18,150 feet in the Mississippian Madison Formation. A test of the Madison recovered a small amount of nonflammable gas and was abandoned. Other deep tests, further south on the Rock Springs Uplift, have tested some nonflammable carbon dioxide gas in the Madison.

The other deep test was the Indian Gap unit #1, which was drilled to a total depth of 10,066 feet in the Nugget Formation and was abandoned. No detections of hydrocarbons were reported in the older strata penetrated at this well.

One other well was drilled to test formations older than Cretaceous age. South Pass Unit #1 in Section 17 T27N, R100W was planned to test the Mississippian Madison at 22,000. Instead, the well-encountered Precambrian granite in the shallow subsurface penetrated the Wind River thrust fault and was drilled to a total depth of 22,947 feet in underlying Cretaceous-aged sediments.

Six exploration wells drilled to total depths in shallow Tertiary formations did not discover any hydrocarbons.

To date 11 units/fields have been discovered in the JMH CAP planning area. The Nitchie Gulch and Pine Canyon fields are the largest, and they extend beyond the boundaries of the planning area. The remaining nine fields are very small, with only one or two producing wells in each. Additional information about these fields is located in Wyoming Geological Association (1979 and 1992) and in IHS Energy Group, BLM, and Wyoming Oil and Gas Conservation Commission files.

Well Elevations and Depths

Surface elevations at well locations in the JMH CAP planning area range from approximately 6,400 feet to 8,100 feet above sea level. Total depths of the wells range from only 218 feet to 22,947 feet. The numbers of wells categorized by depth ranges are as follows:

- < 5,000 feet 18 wells
- 5,000–9,999 feet 80 wells
- 10,000–14,999 feet 44 wells
- 15,000–19,999 feet 13 wells
- > 20,000 feet 1 well

Most wells with total depths between 5,000 and 10,000 feet are located in the Nitchie Gulch unit/field. Nitchie Gulch is located over the crest of the Rock Springs Uplift within the JMH CAP planning area. Wells must be drilled deeper outside the Nitchie Gulch field to reach the same target formations (Frontier and Dakota). The deepest wells that have been drilled to Cretaceous formations are located in the north

and northeastern part of the JMH CAP planning area. The Buccaneer #1 (Section 23 T26N, R102W) is productive from a depth interval of 17,702 to 17,718 feet. It is the only well qualifying as a "deep producing well" (producing from a depth greater than 15,000 feet) in the JMH CAP planning area.

Drilling and Well Completion Rates

Drilling activity and successful completion rates for oil and gas wells are shown in Table A13-2. This table shows that there have been two periods of increased activity. The first was centered on the period when the Nitchie Gulch unit/field was first discovered in 1961. This field was initially developed with a well spacing of 640 acres. Drilling decreased in the 1968–1972 period because development drilling on the 640-acre spacing had been completed.

Drilling activity increased again in the mid 1970s and culminated in the drilling of 48 wells from 1978 to 1982. The increased drilling rate was caused by—

- General increase in gas prices during that period
- Improvements in drilling and completion technology that allowed for the development of areas with smaller per-well gas recovery
- Recognition of the importance of targeting stratigraphic traps that contain most of the potential gas reserves in the JMH CAP planning area
- Exploration for deeper drilling targets.

During this period well spacing was decreased to 160 acres in parts of the Nitchie Gulch unit/field and increased exploration for deeper reserves occurred in the area north and east of the field. Additional exploration would have occurred west of Nitchie Gulch unit/field, but this area had been withdrawn from leasing because of wilderness characteristics.

Improved rates of successful well completions (Table A13-2) since 1972 have been due to the industry's concentration on lower risk development drilling in the Nitchie Gulch unit/field, improvements in geologic analysis, and improvements in drilling and completion technology. Overall, 42 percent of the wells drilled in the JMH CAP planning area have been successful.

Table A13-2. Drilling Rates and Success Percentages

Time Period	Wells Drilled	Producers	Success (%)
Pre-1952	3	0	0
1953–1957	3	0	0
1958–1962	16	3	19
1963–1967	19	9	47
1968–1972	9	1	11
1973–1977	14	4	29
1978–1982	48	17	35
1983–1987	20	13	65

Table A13-2. Drilling Rates and Success Percentages (Continued)

Time Period	Wells Drilled	Producers	Success (%)
1988–1992	16	15	94
1993–1997	1	1	100
1998–2001	3	1	33
Total	**152**	**64**	**42**

Coalbed Methane Drilling and Development History

Tyler et al. (1994 and 1997) reviewed drilling history and potential of the coalbed methane resource in this part of the basin. In the JMH CAP planning area, coals of the Fort Union, Almond, and Rock Springs formations have been tested. Coalbed methane potentials and well locations are shown on Map A13-4. Saxon Exploration Company drilled two tests, the #7-11 in Section 7 T25N, R102W and the #23-15 in Section 23 T25N, R103W. Almond Formation coals (from 6,586–6,629 feet) were tested in the #7-11. The estimated gas content from Almond zone coal cuttings, ranged from 185 to 402 standard cubic feet per ton. This well was allowed to flow for 3 months, through the end of January 1991. It produced 90,300 cubic feet of gas and 442 barrels of water, with a maximum daily rate of 3,200 cubic feet of gas and 21 barrels of water. The Almond coals were abandoned and Saxon perforated a Tertiary Fort Union coal zone at 4,187 to 4,203 feet. The estimated gas content from Fort Union coal cuttings retrieved from this zone ranged from 123 to 145 standard cubic feet per ton. An injectivity/fall-off test was run on this zone and the well was abandoned.

Almond coals (from 5,637–5,673 feet) were also tested in Saxons' #23-15 well. The estimated gas content from Almond zone coal cuttings, ranged from 157 to 181 standard cubic feet per ton. This well was allowed to flow for 4 months, through the end of February 1991. It produced 612,900 cubic feet of gas and 5,902 barrels of water, with a maximum daily rate of 8,700 cubic feet of gas and 48 barrels of water. Estimated gas content from Fort Union coal cuttings was low, ranging from 4 to 30 standard cubic feet per ton. The well was abandoned without testing of any Fort Union coals.

Two other coalbed methane wells were drilled near the south boundary of the JMH CAP planning area. Triton Oil & Gas Corp. and Union Pacific Resources drilled these wells in Section 33 T23N, R102W (wells #3 and #2-33). RME Petroleum now operates both wells. Rock Springs Formation coals were tested in the 3,400 to 3,900 foot interval. The two wells went to a temporarily abandoned status in 1992, due primarily to low gas prices and disappointing test results and secondarily to environmental concern over disposal of produced water.

The Greasewood Wash unit was located east of the Nitchie Gulch unit, on the southern edge of the JMH CAP planning area. Most of the unit area was located outside the planning area, and the initial wells were drilled outside its boundary. The Greasewood Wash unit was created to explore for coalbed methane in the Rock Springs Formation. Water was pumped from the Rock Springs coals for about a year, at depths of 3,826 to 4,239 feet. As of the end of the year 2000, 600 to 700 barrels of water and 12 thousand cubic feet of gas were being produced each day from a total of five pilot test wells. This unit was terminated effective December 22, 2001. Low gas prices during the test period, large volumes of water and associated disposal costs, and carbon dioxide content of the gas may have been issues in the termination of this unit.

In 2000, the previously abandoned Treasure Unit #3 (Section 4 T23N, R101W) was reentered and converted to a water injection well. It was used to dispose of produced water from the Greasewood Wash

coalbed methane unit. The unit operator has not indicated what will happen to this well's status, now that the Greasewood Wash unit has been terminated.

Evaluation of JMH CAP Planning Area Fluid Mineral Resources and Projection of Future Exploration and Drilling Trends

Several studies have been completed to assess hydrocarbon development potential for the Green River Basin, which includes the JMH CAP planning area, and geologic data from 51 of the 53 exploratory units at the planning area were also reviewed. The West 187 and Johnson Gap (deep) exploratory units are currently suspended, and technical information on the units is confidential. Some additional information has been provided through public comment and personal communication with industry representatives and other interested parties. Projections of future drilling trends are based on available information on potential hydrocarbon accumulations and the previous development of oil and gas in the planning area. The potential development activity rates will be used to assess the impacts of proposed management actions for each alternative evaluated in the final EIS for the JMH CAP.

Hydrocarbon Resource Assessments

A number of documents are available that have evaluated hydrocarbon resources for the Greater Green River Basin area. These documents were used to help evaluate the oil and gas resources present in the JMH CAP planning area and project levels of future activity. In general, the resource assessments indicate the total potential hydrocarbon resources in a region, based on geologic knowledge, data on past discoveries, or theory. Actual development activity will be determined by accessibility to resources, exploration and development costs, commodity prices, and production rates required to provide an economically viable return on investment.

Regional Geologic Information

The *Atlas of Major Rocky Mountain Gas Reservoirs* (New Mexico Bureau of Mines & Mineral Resources 1993) summarizes information on those gas reservoirs with cumulative production of at least five billion cubic feet of gas. The reservoirs and their associated plays are discussed. Some of the relevant parameters discussed are reservoir and lithologic data, production data, compositional analyses of produced gas, reservoir engineering parameters, and estimates of proved developed reserves. *Accessibility to the Greater Green River Basin Gas Supply, Southwestern Wyoming* (Barlow and Haun, Inc. 1994) provides additional discussion of plays and maps of play boundaries. It also evaluated the limitations on production and increased costs associated with access to public lands. The CD-ROM "Emerging Resources in the Greater Green River Basin" (Gas Research Institute 1996), an atlas of the Upper Cretaceous, provides geological, production, engineering, and land use data for some of the productive and potentially productive reservoirs in the JMH CAP planning area.

A three CD-ROM set "1995 National Assessment of United States Oil and Gas Resources" (U.S. Geological Survey [USGS] 1996) provides a discussion of some of the potential hydrocarbon plays in the JMH CAP planning area. Potential plays discussed are—

- Rock Springs Uplift
- Basin Margin Anticline
- Subthrust
- Deep Basin Structure
- Cloverly-Frontier
- Mesaverde
- Fox Hills-Lance

- Rock Springs Coalbed Methane
- Almond Coalbed Methane
- Lance Coalbed Methane
- Fort Union Coalbed Methane.

Advanced Resources International, Inc. (2001) prepared *Federal Land Analysis, Natural Gas Assessment, Southern Wyoming and Northwestern Colorado,* for the Department of Energy, in coordination with the BLM and Forest Service. That report estimated potential natural gas resources and reported on how they were affected by federal land use designation and related environmental stipulations. This assessment indicated that approximately 3.3 trillion cubic feet of undiscovered natural gas resources are present in the parts of the JMH CAP planning area that are available for exploration and development.

The comment letter from Barlow and Haun, Inc. (1998) was used as a reference for JMH CAP planning area plays and their potential future gas resource. For coalbed methane, only the Rock Springs Formations potential gas resource was estimated. The plays and their potential future resource are shown in Table A13-3.

Coalbed Methane Resource Assessment

The Potential for Coalbed Gas Exploration and Production in the Greater Green River Basin, Southwest Wyoming and Northwest Colorado (Tyler et al. 1997) presents a discussion of the coalbed gas resource. Information from that paper was used to prepare the map of coalbed methane development potential (Map A13-4). *The 1995 National Assessment of United States Oil and Gas Resources* (USGS 1996) also provides an assessment of coalbed methane resource potential for plays that are located in the JMH CAP planning area.

Resource Potential Estimates

For the draft EIS, two methods were used to estimate the number of wells required to develop undiscovered hydrocarbon accumulations (other than coalbed methane resources) in the JMH CAP planning area. Both methods calculated about the same number of wells from these undiscovered accumulations. These estimates are based on the size of the planning area, the thickness of deposits that may host hydrocarbon accumulations, the distribution of petroleum source rocks and distribution of existing reserves. These resource estimates indicate the total amount of petroleum hydrocarbons that may be present in the planning area and the number of wells required to produce that resource. The resource estimates and the projected number of wells required for total development of hydrocarbons do not include consideration of hydrocarbon volumes required to support exploration and development costs. The majority of wells drilled in the planning area have not been completed as producing wells because of the absence of hydrocarbons or potential production rates that would not provide enough income for operation of a producing well. The previous production history in the planning area indicates that the completion rates of all wells is about 42 percent, and exploration wells in new areas have a success rate of approximately 15 percent.

Resource Method Estimate

This method was developed from information received in the Barlow and Haun, Inc. (1998) scoping comment letter and information obtained for development of this report. Barlow and Haun determined a potential future gas resource of 2,100 billion cubic feet. Of that total, 50 billion cubic feet of gas was estimated for a potential coalbed methane in the Rock Springs Formation. A coalbed methane resource for the Almond, Lance, and Fort Union formations was not estimated. The potential gas resource, not

including coalbed methane, is 2,050 billion cubic feet. A review of the existing producing wells in the JMH CAP planning area indicates that an average well (non coalbed methane) will produce 2.3 billion cubic feet of gas. To recover the estimated 2,050 billion cubic feet from wells that recover an average of 2.3 billion cubic feet would require 891 producing wells in the JMH CAP planning area.

Table A13-3. Plays and Their Potential Future Resource

Play	Play Type	Gas Resource BCF (billion cubic feet)
Fort Union and Lance	Basin-centered gas	200
Lewis Shale	Deep-water marine sandstone	150
Upper Almond Sandstone	Shore-face sandstone	100
Upper Almond Sandstone	Marine-bar sandstone	100
Lower Almond-Ericson	Basin-centered gas	500
Rock Springs Formation	Coalbed methane	50
Frontier Formation	Fluvial sandstone	100
Frontier Formation	Marine sandstone	100
Muddy Sandstone	Marine sandstone	200
Muddy Sandstone	Fluvial sandstone	100
Dakota Sandstone	Fluvial sandstone	100
Structural Accumulations	Multiple objectives	400

Checkerboard Method Stanley's (1995)

The Checkerboard Method is intended as a simple and quick way of estimating the number of undiscovered accumulations where some past activity has occurred. When this procedure was followed for the JMH CAP planning area, it was determined that 359 sections could contain producible hydrocarbons. Assuming development of each section would require 2.5 to three producing wells, 897 to 1,077 wells (not including coalbed methane wells) would be needed to develop the available resources in the JMH CAP planning area.

Wyoming State Geological Survey Report

As a cooperating agency in the preparation of the JMH CAP EIS, the Wyoming State Geological Survey (WSGS) evaluated the resource potential for the planning area. This resource evaluation provides production volume estimates based on probabilities of expansion of existing production and additional resources in the planning area. In addition, the report provides an estimate for coalbed methane resource potential in the area.

Based on the probabilities of additional discoveries in the planning area, WSGS estimates that an additional 1.255 trillion cubic feet of gas can be economically developed with current technology. The WSGS also estimates that 2.05 trillion cubic feet of coalbed methane can be produced, for a current resource estimate of 3.305 trillion cubic feet of natural gas from these sources. After publication of the WSGS report, their coalbed methane recoverable resource for present technology and potential number of wells were determined to be incorrect. The corrected information has been used when preparing assumptions and analysis for each alternative. The WSGS report also estimates that 535,000 barrels of oil and natural gas liquids could also be produced by currently available technology.

These resource estimates are based on probabilities of increased production from current trends and analogues of other producing trends in southwestern Wyoming, including Lewis Shale turbidite flows, deep mountain-front structures, and overpressured low permeability sandstones. The chance of success for additional development for extension of current production is rated at 95 percent, with an additional

95 billion cubic feet of gas (on a risk-discounted basis) being produced by an additional 38 wells. Risk factors for finding new fields that are analogues of other producing areas range from 0.25 to 10 percent, with risk-discounted production at 1.16 trillion cubic feet of gas and 535,000 barrels of oil. The predicted coalbed methane reserves are 2.68 trillion cubic feet of gas from the Fort Union and Lance formations.

The coalbed methane assessment is based on the assumptions that gas can successfully be produced from depths up to 7,000 feet. Tertiary coals of the Fort Union and Lance Formations are similar to the coal seams of the Cretaceous Rock Springs Formation, and an economical method for disposal of produced water will be developed. At present, the general industry standard maximum drilling depth for testing coal seams is 5,000 feet. The potential coal reserves identified by Cook et al. (2002) in the 5,000 to 7,000-foot depth range will probably not be tested until overlying zones have been evaluated. Work by Tyler et al. (1997) indicates that the gas contents of reported Tertiary age coals are less than those reported for the older Mesaverde Group coals of Cretaceous age. If their observation is correct, then the gas contents used by Cook et al. (2002) are optimistic and predicted reserves would be lower than their estimate. In addition, previous attempts to develop coalbed methane in this part of southwestern Wyoming have produced water with elevated total dissolved solid contents, which were reinjected into the subsurface to comply with surface water quality standards for the Colorado River Basin.

The WSGS report estimates that reserves development would require drilling of 322 conventional oil and gas wells and 543 coalbed methane wells in the study area. These resource potential estimates do not include consideration of economic factors and logistical considerations for development activity, including commodity prices and demand, development costs, regulatory requirements and non-discretionary closures within the planning area such as WSAs. The resource estimates, risk factors, and number of required wells from the WSGS report are listed in Table A13-4.

Table A13-4. Oil and Gas Potential, by Play, for the Jack Morrow Hills Area, Southwestern Wyoming, from Wyoming State Geological Survey, Open File Report 2002-1

Play Name	Target Formation	Unrisked Resource		Risk/ Recovery Factor (%)	Recoverable Resource (Present Technology)		Potential No. of Wells	Future Reserves	
Conventional Development	Frontier, Dakota	0.100	TCFG	95	95.00	BCFG	38	50	BCFG
Lewis Shale Turbidites	Lewis	0.137	TCFG	10	13.70	BCFG	49	130	BCFG
		2.300	MMBO	2	230.00				
Deep Mountain-Front Structures	Phosphoria, Madison	4.000	TCFG	2	80.00	BCFG	4	400	BCFG
Deep-Seated Thrust Structures	Frontier, Dakota	0.621	TCFG	5	31.00	BCFG	88	31	BCFG
		6.100	MMBO	5	305.00	MBO		305	MBO
Coalbed Methane	Fort Union, Lance	10.250	TCFG	20	2,049.63	BCFG	543	1,340	BCFG
Overpressured Low-perm. Sands	Frontier	40.300	TCFG	0.25	100.75	BCFG	20	705	BCFG
Overpressured Low-perm. Sands	Mesaverde	354.800	TCFG	0.25	887.00	BCFG	100	6,209	BCFG
Overpressured Low-perm. Sands	Lewis	2.400	TCFG	0.5	12.00	BCFG	8	132	BCFG
Overpressured Low-perm. Sands	Fox Hills/ Lance	14.400	TCFG	0.25	36.00	BCFG	15	252	BCFG

Note: BCFG = billion cubic feet of gas, MMBO = million barrels of oil, MBO = thousand barrels of oil, TCFG = trillion cubic feet of gas.

National Oil and Gas Assessment for Southwestern Wyoming

The USGS recently reassessed the Southwestern Wyoming Province (USGS 2002 and 2003), which contains the entire JMH CAP planning area. This is the most recent analysis for determining undiscovered hydrocarbon resources used to estimate the undiscovered resource contained within the JMH CAP planning area. The USGS used geology-based, well-documented estimates of quantities of oil and gas having the potential to be added to reserves within a future time frame—forecast span—of 30 years. This forecast span is longer than the forecast span for this analysis.

The USGS recognized 18 assessment units that lie at least partially within the JMH CAP planning area. To determine the potential resource within the JMH CAP planning area, BLM—

- Assumed a homogenous distribution of each resource within each assessment unit area
- Calculated the percent of each assessment unit lying within the JMH CAP planning area
- Multiplied that percentage by the USGS mean estimates for the entire assessment unit area to calculate JMH CAP planning area assessment unit resource values.

BLM estimates that the JMH CAP planning area contains a mean undiscovered volume of 1.02 million barrels of oil, 3.23 trillion cubic feet of gas, and 110.84 million barrels of natural gas liquids. In addition,

BLM estimates that the undiscovered volume of coalbed gas is approximately 48.30 billion cubic feet of gas in Fort Union and Mesaverde coalbed gas assessment units.

DEVELOPMENT SCENARIOS

Each of the land use alternatives being evaluated in the final EIS for the JMH CAP include management actions that would affect oil and gas development activity. Information on existing oil and gas development and comments on the draft EIS were considered in the revised development estimates. The expected level of development activity is estimated for each set of management actions evaluated in the final EIS. These estimates provide the basis for evaluating impacts of the land use alternatives related to oil and gas development. The nearest proposed project is that of Kennedy Oil located south of the planning area. Currently, there is not any active coalbed methane production in the planning area or nearby parts of the Green River Basin.

Comments on Draft EIS Reasonably Foreseeable Development

Previous estimates of oil and gas development activity for the planning area were made to support the draft EIS for the JMH CAP. Comments on the draft EIS and scoping for the supplemental EIS provided additional information for estimates of development activity in the JMH CAP planning area. Diedrich (1999) projected that 88 to 111 wells could be drilled in the planning area, if all areas outside of WSAs were made available for development. Landreth (1999) indicated that the producing Frontier and Dakota wells in the Nitchie Gulch unit were being produced to their economic limit and that no additional in-fill drilling was anticipated. A number of scoping comments made for this EIS are relevant to a projection of drilling and exploration trends. Berco Resources, LLC, revealed a plan to drill up to 38 additional in-fill wells on their leasehold acreage in the Nitchie Gulch area. It only recently acquired these properties (January 1, 2001) from Hunt Oil Company, and Hunt had not indicated any interest in more in-fill wells. Berco has stated that it might develop some parts of its acreage at a well density of up to six wells per section to produce the remaining reserves. The proposed well density for this development activity is shown in Figure A13-1. Operators of the three suspended exploratory units have indicated that they still intend to test these units upon completion of the planning process.

Kerr-McGee Rocky Mountain Corporation; Odyssey Exploration, Inc.; and Bjork, Lindley, Danielson, & Little, PC, have suggested that the BLM should "project a larger number of possible wells (perhaps 300) in the entire area." No supporting information for their recommendation was included.

The U.S. Environmental Protection Agency (EPA) believes that "the impacts should evaluate a much more intense development scenario" for coalbed methane development. It points out that in the core area "the number of coalbed methane wells could be in the range of 800 wells." A spacing of 80 acres per well seems to be assumed to account for that total. No supporting information for the EPA's recommendation was included.

In addition, the operator of the terminated Greasewood Wash coalbed methane unit indicated it still has an interest in exploring for coalbed methane in Cretaceous-aged sediments in the area.

Assessment of Existing Production

Cumulative gas production and estimated ultimate gas production was determined for most wells that produce or have produced in the JMH CAP planning area (Table A13-5). Cumulative production was available for one coalbed methane well. Projected production could not be estimated for either coalbed methane well, or for the two oil shut-in wells (Gold Coast #16-6 and Big Bear Unit 11-7). A total of 128.411 billion cubic feet of gas has been produced through 2001. Projected ultimate production from

existing wells is estimated to be 144.363 billion cubic feet of gas, assuming that active wells would be abandoned when production declined to 20,000 cubic feet of gas per day. Subtracting cumulative gas production from projected ultimate production indicates that an additional 15.952 billion cubic feet of gas can be recovered from existing gas wells in the JMH CAP planning area.

An abandonment date was recorded for abandoned wells or has been determined using decline curve analysis for currently producing wells (Table A13-5). The decline curve analysis indicates that 31 of the 44 presently producing wells will reach the economic production threshold of 20,000 cubic feet of gas per day before the end of 2021. Estimated abandonment dates will be used to determine when the surface at each well will be reclaimed.

Of the 64 wells completed as producers, 44 are still producing or are capable of producing. Analysis of producing and abandoned wells indicated that the average well would produce 2.3 billion cubic feet of gas with a well life of 26 years. There is significant variation in total production and well life; some wells produce relatively small amounts of gas for a short period, while the maximum total production from individual wells has exceeded 10 billion cubic feet of gas for four wells located in the JMH CAP planning area. Each of these high-volume producing wells has a projected productive life of more than 50 years.

The overall success rate for exploration and production wells combined in the planning area is about 54 percent. This rate was determined by comparing wells drilled in the period 1978–1997 against the number completed as producers. During this period, 46 producing gas wells were completed out of the 85 wells drilled. Recent success rates have been high and are expected to remain relatively high due to (1) continued improvements in geologic analysis and in drilling and completion technology and (2) expected in-fill drilling and step-out drilling from producing areas. Field development drilling success rates in the Green River Basin have been enhanced by the use of exploration technology, including three-dimensional seismic surveys. Nondrilling exploration technologies, such as seismic surveys, increase the drilling success rate by identifying favorable areas for producing wells and excluding areas from consideration that have lower development potential. The use of these technologies decreases the number of unsuccessful wells drilled and may result in a net decrease in total wells drilled in an area, along with decreases in surface disturbances and other impacts associated with drilling.

Most drilling activity has been concentrated in the south-central part of the JMH CAP planning area (Nitchie Gulch unit/field), with additional exploratory wells scattered across the rest of the area. If allowed, in-fill drilling would occur in the Nitchie Gulch field (up to 38 wells), and activity would spread out and down the flanks of the Rock Springs Uplift. Exploration drilling is expected to occur in areas where exploratory unit proposals have been made but have not yet been tested. Development of the play related to Shell's Pacific Creek Federal B3-33, could extend drilling into the JMH CAP planning area, in the vicinity of T26N, R103W. Scattered exploratory wells will continue to be drilled throughout the area, and if successful, field delineation will occur. The lowest rates of activity are expected to be on the north edge of the planning area, where targets are deep and lie below granites of the Wind River Thrust.

Figure A13-1. Proposed Drilling Density for Nitchie Gulch Field

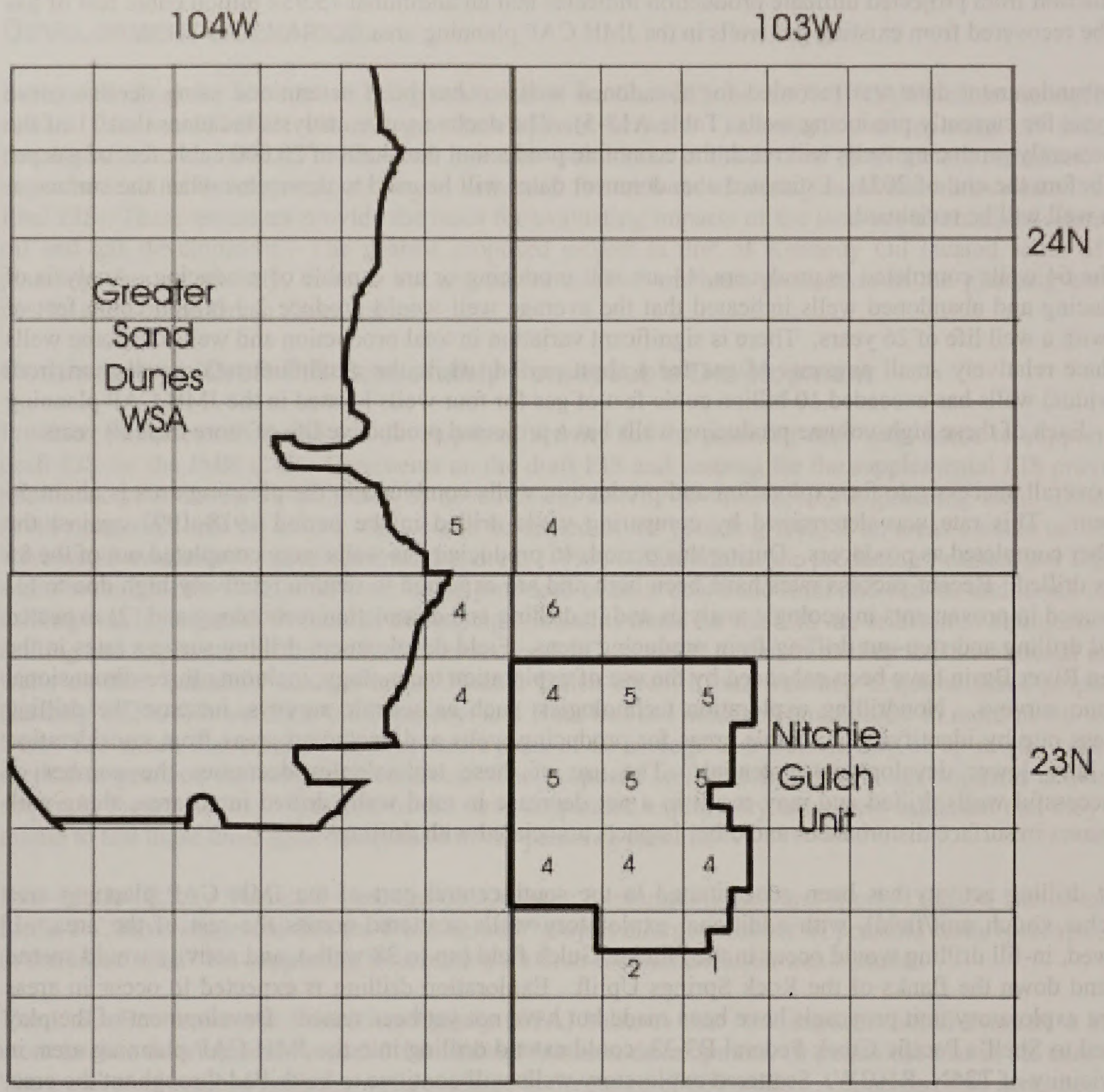


Table A13-5. Production Summary for Oil and Gas Wells in Jack Morrow Hills

Section	Township	Range	Well Name	Well Number	Producing Formation	Oil Initial Production (Barrels/Day)	Gas Initial Production (MCF/Day)	Present Status	Cumulative Gas Production (MMCF)	Ultimate Gas Production (MMCF)	Year Abandoned
3	23N	102W	STEAMBOAT	1	Frontier	0		GSI	519	519	2002
			MOUNTAIN UNIT								
33	23N	102W	UPRC	3	Rock	0	0	TA	1	Unknown	Unknown
					Springs coal						
33	23N	102W	UPRC	2-33	Rock	0	3	TA	0	Unknown	Unknown
					Springs coal						
3	23N	103W	AMOCO FEDERAL	13-3	Frontier	0	1,400	P&A	203	203	1983
4	23N	103W	DUNCAN FEDERAL	1-4	Frontier	0	526	P&A	383	383	1983
5	23N	103W	NORTH	2-5	Dakota	0	1,060	GSI	595	610	2002
			NITCHIE FEDERAL								
5	23N	103W	NORTH	3-5	Frontier	0	290	GSI	9	9	1991
			NITCHIE FEDERAL								
5	23N	103W	GOVERNMENT	1-5	Frontier	0	2,615	PGW	2,212	2,377	2013
6	23N	103W	NORTH NITCHIE	2-6	Frontier	0	1,200	PGW	2,610	3,062	2018
6	23N	103W	NORTH NITCHIE	2-6	Dakota	0		P&A	812	812	1988
6	23N	103W	NORTH NITCHIE	20-6	Frontier	0	20	P&A	278	278	1995
6	23N	103W	NORTH NITCHIE	30-6	Frontier/	0	2,332	PGW	1,918	2,227	2015
					Dakota						
6	23N	103W	GOVERNMENT	1	Frontier/	0	1,895	PGW	2,709	3,439	2042
			ANDERSON		Dakota						
7	23N	103W	NITCHIE	14-7	Frontier	0	1,096	PGW	2,462	2,743	2014
			GULCH UNIT								
7	23N	103W	NITCHIE	19-7	Dakota	0	440	PGW	1,684	1,927	2015
			GULCH UNIT								
7	23N	103W	NITCHIE	6-7	Frontier	0	3,240	PGW	15,794	16,469	2020
			GULCH UNIT								
8	23N	103W	NITCHIE	22-8	Dakota	0	440	PGW	1,056	1,680	2026
			GULCH UNIT								
8	23N	103W	NITCHIE	15-8X	Frontier	0	180	PGW	649	724	2007
			GULCH UNIT								
8	23N	103W	NITCHIE	7-8	Frontier	0	120	PGW	9,977	10,513	2031
			GULCH UNIT								

Table A13-5. Production Summary for Oil and Gas Wells in Jack Morrow Hills (Continued)

Section	Township	Range	Well Name	Well Number	Producing Formation	Oil Initial Production (Barrels/Day)	Gas Initial Production (MCF/Day)	Present Status	Cumulative Gas Production (MMCF)	Ultimate Gas Production (MMCF)	Year Abandoned
8	23N	103W	NITCHIE	7-8	Dakota			P&A	1,136	1,136	1995
			GULCH UNIT								
9	23N	103W	NITCHIE	11-9	Frontier	0	1,507	PGW	1,642	1,998	2021
			GULCH UNIT								
16	23N	103W	NITCHIE	17-16	Frontier	0	542	GSI	750	1,006	2015
			GULCH UNIT								
16	23N	103W	NITCHIE	17-16	Dakota	0	1,265	PGW	3,697	4,594	2028
			GULCH UNIT								
17	23N	103W	NITCHIE	1-17	Frontier	0	1,000	GSI	1,172	1,172	2002
			GULCH UNIT								
17	23N	103W	NITCHIE	1-17	Dakota	0	1,000	PGW	1,309	1,575	2017
			GULCH UNIT								
17	23N	103W	NITCHIE	4-17	Frontier	0	14,000	P&A	16,388	17,014	2020
			GULCH UNIT								
17	23N	103W	NITCHIE	4-17	Dakota	0	12,300	PGW	1,824	1,824	2002
			GULCH UNIT								
18	23N	103W	NITCHIE	12-18	Frontier	0	227	GSI	2,832	4,132	2012
			GULCH UNIT								
18	23N	103W	NITCHIE	8-18	Frontier	0	3,600	PGW	10,561	11,479	2032
			GULCH UNIT								
19	23N	103W	NITCHIE	20-19	Frontier	0	450	PGW	968	1,019	2004
			GULCH UNIT								
19	23N	103W	NITCHIE	5-19	Frontier	0	950	P&A	1,812	1,812	1982
			GULCH UNIT								
20	23N	103W	NITCHIE	13-20	Frontier	0	1,572	PGW	4,081	4,338	2012
			GULCH UNIT								
20	23N	103W	NITCHIE	2-20	Frontier	0	1,750	P&A	1,191	1,191	1987
			GULCH UNIT								
20	23N	103W	NITCHIE	2-20	Dakota	0	1,380	P&A	369	369	1985
			GULCH UNIT								
21	23N	103W	NITCHIE	21-21	Frontier	0	436	PGW	348	390	2005
			GULCH UNIT								

Table A13-5. Production Summary for Oil and Gas Wells in Jack Morrow Hills (Continued)

Section	Township	Range	Well Name	Well Number	Producing Formation	Oil Initial Production (Barrels/Day)	Gas Initial Production (MCF/Day)	Present Status	Cumulative Gas Production (MMCF)	Ultimate Gas Production (MMCF)	Year Abandoned
21	23N	103W	NITCHIE	21-21	Dakota	0	1,300	PGW	1,306	1,574	2015
			GULCH UNIT								
21	23N	103W	NITCHIE	3-21	Dakota	0	1,864	PGW	443	552	2010
			GULCH UNIT								
22	23N	103W	FEDERAL	2-22	Dakota	0	1,538	PGW	3,335	4,588	2042
26	23N	103W	FEDERAL	4-26	Frontier	0	15	P&A	3	3	1978
27	23N	103W	UPRR 1-27	1	Dakota	0	1,415	PGW	1,089	1,096	2002
28	23N	103W	NITCHIE	16-28	Frontier	0	1,460	PGW	2,240	2,579	2016
			GULCH UNIT								
28	23N	103W	NITCHIE	16-28	Dakota	0	1,400	PGW	2,134	2,440	2019
			GULCH UNIT								
28	23N	103W	PINE CANYON	1-28	Frontier	0	100	PGW	66	66	2002
			FEDERAL								
28	23N	103W	PINE CANYON	1-28	Dakota	0	4,000	GSI	446	446	2002
			FEDERAL								
1	23N	104W	JAMIESON “A”	1	Frontier	0	1,150	P&A	738	738	1999
2	23N	104W	WINSTON	1	Frontier/	0	800	P&A	601	601	1982
			FEDERAL		Muddy						
3	23N	104W	FEDERAL	9-3	Frontier	0	156	P&A	0	0	UNKNOWN
11	23N	104W	SAND DUNES	1	Frontier	0	476	P&A	544	544	1999
			FEDERAL								
11	23N	104W	GOVT AMAX	11-10	Frontier	0	330	P&A	152	152	1966
12	23N	104W	ROGERS FEDERAL	20-12	Frontier	0	750	PGW	877	1,084	2013
12	23N	104W	ROGERS	1-12	Frontier	0	1,140	PGW	6,138	6,619	2018
13	23N	104W	GOVERNMENT	7-13	Frontier	0	344	P&A	345	345	1990
26	23N	104W	NITCHIE	1-26	Frontier	0	24	P&A	0	0	1977
			GULCH FED								
28	24N	101W	TREASURE UNIT	4	Frontier	0	360	PGW	112	112	2002
33	24N	101W	TREASURE UNIT	1	Muddy	0	4,309	PGW	615	615	2002
13	24N	102W	FREIGHTER	1	Mowry Sand	0	1,362	P&A	164	164	1986
			GAP UNIT								
8	24N	103W	ESSEX MOUNTAIN	1-8	Frontier	0	240	PGW	194	259	2007

Table A13-5. Production Summary for Oil and Gas Wells in Jack Morrow Hills (Continued)

Section	Township	Range	Well Name	Well Number	Producing Formation	Oil Initial Production (Barrels/Day)	Gas Initial Production (MCF/Day)	Present Status	Cumulative Gas Production (MMCF)	Ultimate Gas Production (MMCF)	Year Abandoned
10	24N	103W	RIM ROCK	1	Muddy	0	1,569	PGW	829	1,204	2022
16	24N	103W	RIM ROCK UNIT	2	Frontier/	0	906	PGW	388	462	2007
					Muddy						
21	24N	103W	FEDERAL	21-1	Dakota	0	2,126	PGW	1,058	1,968	2044
31	24N	103W	NORTH NITCHIE	30-31	Frontier	0	2,689	GSI	2,640	2,716	2006
31	24N	103W	NORTH NITCHIE	10-31	Frontier	0	1,252	P&A	265	265	1991
31	24N	103W	NORTH NITCHIE	30-31F	Frontier	0	5	P&A	0	0	1990
32	24N	103W	NORTH NITCHIE	10-32	Dakota	0	601	P&A	218	218	1992
33	24N	103W	FEDERAL	13-33	Frontier	0	76	P&A	92	92	1980
34	24N	103W	FEDERAL	13-34	Frontier	0	185	P&A	8	8	1980
24	24N	104W	FEDERAL	44-24	Frontier	0	278	P&A	40	40	UNKNOWN
25	24N	104W	NORTH NITCHIE	40-25	Frontier	0	423	PGW	428	521	2009
35	24N	104W	GOODSTEIN	1-35	Frontier	0	638	PGW	461	488	2003
			FEDERAL								
36	24N	104W	NORTH NITCHIE	40-36	Frontier	0	2,271	PGW	2,909	3,620	2027
36	24N	104W	NORTH NITCHIE	20-36	Frontier	0	695	PGW	959	1,065	2009
36	24N	104W	NORTH NITCHIE	30-36	Frontier	0	2,282	PGW	1,375	1,415	2005
6	25N	102W	GOLD COAST	16-6	Almond	5	425	GSI	0	Unknown	Unknown
7	25N	102W	BIG BEAR UNIT	11-7	Rock	23	116	GSI	17	Unknown	Unknown
					Springs						
23	26N	102W	BUCCANEER UNIT	1	Muddy	0	1,027	PGW	1,232	2,679	2039

Abbreviations: MCF – thousand cubic feet; MMCF – million cubic feet; GSI – shut-in gas well; TA – temporarily abandoned; P&A – plugged and abandoned; PGW – producing gas well

Activity Estimate for Alternative 1

In selecting and leasing exploration areas and drilling wells, oil and gas companies consider the potential for economic accumulations for oil and gas, the cost of leasing and drilling, and the market prices for the produced commodities. Factors used to estimate the size of potential reserves include geologic data from nearby wells, geophysical data used to interpolate conditions between well control, and production history and occurrence of oil and gas shows in the region. Excluding parts of the planning area that have been removed from leasing and development based on regulatory and statutory requirements (such as WSAs and areas with surface slopes exceeding 25 percent), 469,251 acres are currently available for development.

Previous exploration activity in the JMH CAP planning area and nearby areas, and the use of non-drilling exploration technologies such as three-dimensional seismic surveys indicate that the success rate for new exploration wells in the planning area will be approximately 15 percent. Resource estimates for the planning area are based on data from wells in the planning area and economic oil and gas accumulations found in other areas that occur in geologic settings that are similar to the planning area. Available resource estimates indicate that approximately 2 trillion cubic feet of recoverable gas may be present in the planning area that is not associated with coalbed methane. The planning area is characterized by a fairly complex geologic setting, with the potential for multiple types of oil and gas accumulations, including stratigraphic, structural, and basin-centered accumulations.

More than 150 wells have been drilled in the planning area; however a significant portion of the planning area has not been fully explored, as existing wells have been concentrated on exploitation of existing discoveries, and more than half of the wells drilled in the planning area are less than 10,000 feet in total depth. This is typical of exploration and development patterns for oil and gas producing areas, with initial exploration activities based on shallow targets with structural expression at the land surface, followed by exploration for deeper targets that are based on inferences about potential occurrences. Based on considerations of the number of potential accumulation types, the geologic complexity of the area, and the prevalence of oil and gas occurrences in the planning area, a maximum average exploration well density of one well for every four sections is projected for the planning area. This would result in drilling of 156 exploration wells in the planning area. This represents the maximum foreseeable development in the available parts of the planning area during the planning horizon, based on the commodity prices that support a high level of interest in development over the planning period. This level of exploration activity, along with seismic data acquired during exploration programs, would provide sufficient information for stratigraphic correlation and structural mapping of oil and gas reservoirs in the plays that are potential development targets in the planning area.

This level of exploration activity should result in about 23 discovery wells, based on past success rates for exploration in this portion of the Green River Basin. The average number of wells in currently producing units within the JMH CAP planning area is nearly four. Based on the average number of wells per producing unit, development of the new discoveries will include 70 development wells, and development drilling in existing producing areas is expected to result in drilling of 38 additional producing wells, resulting in a total of 108 new development wells. The total estimated drilling activity is 264 wells drilled, with 132 wells placed in production. This would result in discovery and placement into production of approximately 15 percent of the available oil and gas resource in the planning area that is not associated with coalbed methane. The development activity estimates and associated production volumes for each alternative are listed in Table A13-6.

Activity Estimate for Alternative 2

The preservation management action would result in no new leasing in sensitive areas and would provide compensation for existing rights. If exchanges for existing leases are executed, no new drilling and completion of production wells would occur in the sensitive areas. In parts of the planning area without sensitive resources, leasing and development could occur, consistent with the planning requirements of the Green River RMP. With successful exchange of existing leases, total development activity under this alternative is expected to include the following activities. Approximately 86 exploration wells would be drilled in the rest of the planning area at the projected density for exploration activity, resulting in 13 new producing wells. Development of the new discoveries would be expected to require drilling of 39 new producing wells, along with 38 wells drilled to expand existing production, resulting in 77 new development wells. A total 163 new wells would be drilled, with 90 new wells placed in production.

Activity Estimate for Alternative 3

This management alternative controls leasing and levels of drilling activity to prevent irreversible adverse impacts on sensitive resources in the planning area. Past drilling rates are assumed to be the target activity level for development controls. A statistical analysis was developed to determine the number of wells that could be drilled during the 20-year period, assuming that the entire JMH CAP planning area was available for development. Since the early 1980s, large parts of the planning area have not been available for development or have had development restrictions, distorting that period's data. Past activity shows that the highest 5-year rate was during the 1978–1982 period, when 48 wells were drilled (Figure A13-2). Few land use restrictions were in place at that time and most of the area was open for development. Assuming that existing requirements for protection of other resources would allow drilling activity at a level near the maximum rate observed for a 5-year period, a maximum rate of drilling activity can be projected. At a rate of 46 wells per 5-year period, an additional 205 wells could be drilled in the JMH CAP planning area, including 115 exploration wells and a total of 90 development wells, with 107 new wells placed into production.

This alternative is based on the RFD analysis (Stilwell 2002), with additional adjustments for areas where oil and gas development will not occur to comply with the Wilderness Act, and is considered to reflect the most likely development scenario that would occur in the planning area if current management practices were continued in the planning area, along with development of planning criteria for new development activity in the core area.

Activity Estimate for the Proposed JMH CAP

The Proposed JMH CAP provides for controls on leasing and levels of drilling activity to prevent irreversible adverse impacts on sensitive resources in the planning area. The overall level of activity would be managed through an implementation, monitoring, and evaluation management strategy (Appendix 17), which would reinstate all suspended leases within 3 years of signing the Record of Decision (ROD), close a portion of the planning area to new leasing consideration, and offer leases in other areas with stipulations to protect sensitive resources. New lease offerings in portions of the planning area would be based on such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Appropriate mitigation measures would be based on observations of resource indicators, such as wildlife populations and distribution, and non-development factors, such as disease and drought.

Past drilling rates are assumed to be the target activity level for development controls. These factors indicate that similar development activity levels may occur as projected for Alternative 3. Past activity shows that the highest 5-year rate was during the 1978–1982 period, when 48 wells were drilled. Few

land use restrictions were in place at that time, and most of the area was open for development. Assuming that existing requirements for protection of other resources would allow drilling activity at a level near the maximum rate observed for a 5-year period, a maximum rate of drilling activity can be projected. At a rate of 46 wells per 5-year period an additional 205 wells could be drilled in the JMH CAP planning area, including 115 exploration wells and a total of 90 development wells, with 107 new wells placed into production.

This alternative is based on the modified RFD analysis (Stilwell 2002) with additional adjustments described in Alternative 3.

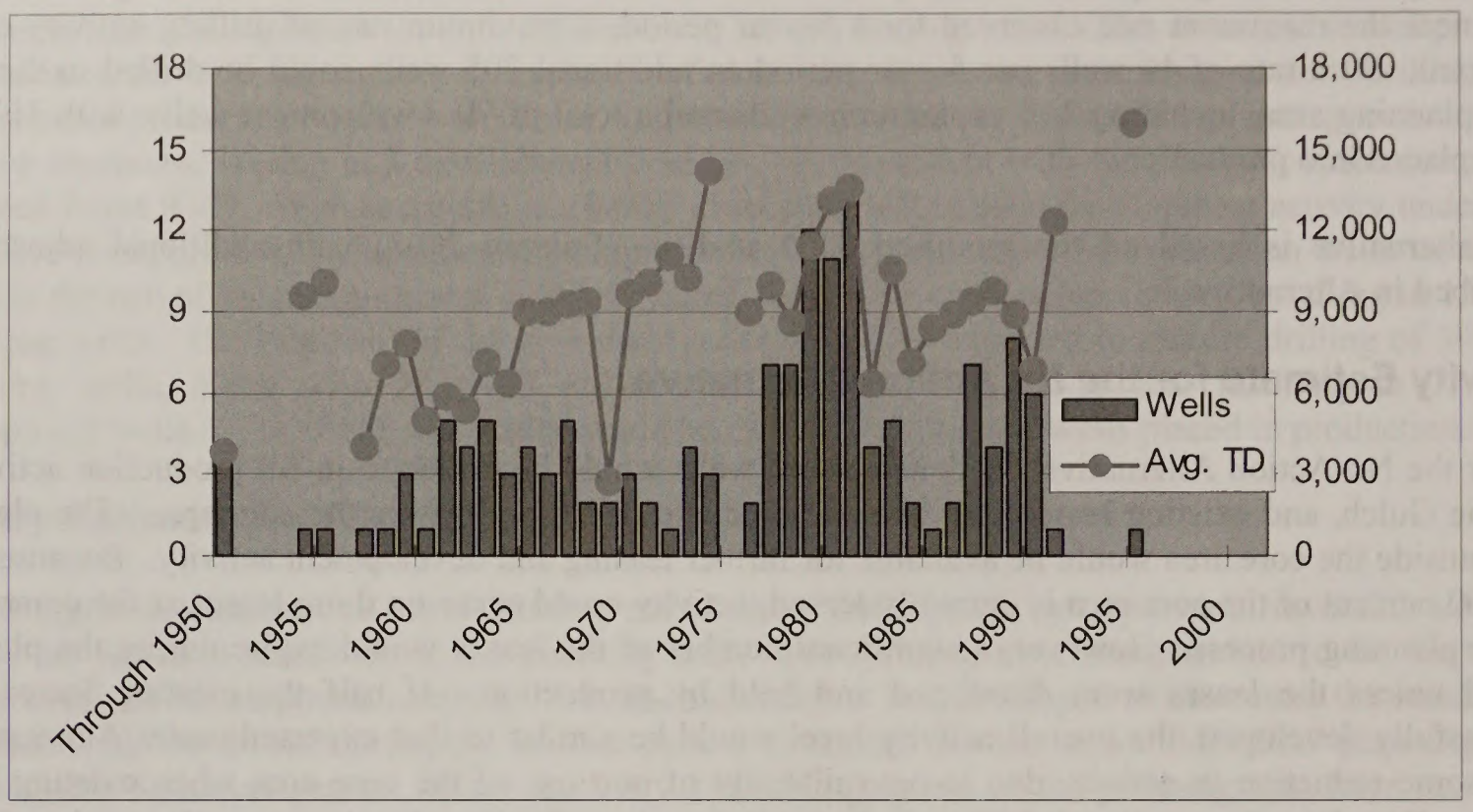
Activity Estimate for the No Action Alternative

Under the No Action Alternative, 38 development wells would be drilled to in-fill production activity at Nitchie Gulch, and existing leases could be explored and developed within the core area. The planning area outside the core area would be available for further leasing and development activity. Because more than 60 percent of the core area is currently leased, activity could occur on those leases at the completion of the planning process. However, a significant number of the leases would expire during the planning period unless the leases were developed and held by production. If half the existing leases were successfully developed, the overall activity level would be similar to that expected under Alternative 1, with some reduction in activity due to unavailability of portions of the core area when existing leases expire. Based on the predicted drilling and completion rates for the planning area, the total estimated drilling activity would be 221 wells drilled, with 114 wells placed in production. This would include 126 exploration wells and 95 development wells drilled in the planning area.

Table A13-6. Estimated Oil and Gas Development Activity by Management Alternative for the JMH CAP Planning Area

Alternative	Exploration Wells	Development Wells	Well Total	New Producing Wells
1	156	108	264	132
2	86	77	163	90
3	115	90	205	107
Proposed JMH CAP	115	90	205	107
No Action	126	95	221	114

Figure A13-2. Drilling Trends at the JMH CAP Planning Area



Coalbed Methane Development

Resource Potential

The industry has expressed interest in continuing to explore for potential coalbed methane reserves in the JMH CAP planning area. Map A13-4 shows areas of future potential for continued exploratory and development activity, assuming that all lands would be available for lease and development. Information in Tyler et al. (1997) was used to prepare Map A13-4. The eastern lobe of this map outlines the area of Cretaceous-aged (Rock Springs and Almond coals) coalbed methane potential, while the western lobe outlines the area of Tertiary-aged (Fort Union coals) potential.

Preliminary testing of the Fort Union, Almond, and Rock Springs Formations has not been successful in the area. Development has not continued, primarily because of low gas prices and disappointing test results and, secondarily, because of environmental concern over disposal of produced water. The Rock Springs appears to have the highest potential for success, because those coals are thickest and gas content is favorable. The comment letter of Barlow and Haun, Inc. (1998) indicates a potential gas reserve of 50 billion cubic feet. Almond coals have high estimated gas contents (as indicated in the #7-11 and #23-15 wells). New estimates by Cook et al. (2002) indicate that 2.68 trillion cubic feet of Fort Union coalbed methane may be present as an extractable resource in the planning area.

Activity Estimate for Alternative 1

No coalbed methane project has been determined to be economic in the Wyoming part of the Greater Green River Basin. The Greasewood Wash coalbed methane unit was terminated in December 2001 and all unit wells are proposed for abandonment. Testing is occurring in the Cow Creek field area, some 80 miles southeast. Other projects are proposed in the Greater Green River Basin, but none near the JMH CAP planning area. Discussion with industry indicates that the planning area has only exploratory interest for coalbed methane resources in the near term. Any action subsequent to an initial phase of exploration is so speculative as to preclude reasonable analysis at this time.

An initial phase of exploration could include up to 50 wells. Based on their evaluation of the performance of wells at the Greasewood Wash coalbed methane unit, WSGS staff have indicated that as many as 25 closely spaced wells would be required to effectively dewater the coal and determine maximum gas production rates (Cook and DeBruin, personal communication, 2002). Only at that level of activity could economic viability be estimated. Assuming that 50 coalbed methane wells would be drilled in the early part of the planning period allows for exploratory testing at two potential locations in the JMH CAP planning area. Potential locations for testing would be first expected in the Cretaceous-aged coals in the southwestern part of the eastern lobe, where depths are shallowest. At least small quantities of gas would probably be produced from any test, and successful completion of two exploratory projects could result in gas production rates of several hundred thousand cubic feet of gas per day.

To project drilling activity, it was assumed that an initial exploratory test phase could occur as early as 2003. Up to 25 wells would be drilled over a short period of time. A second phase (up to 25 additional wells) could begin as early as 2005. Economic factors could affect actual project timing or limit activity levels. For this alternative, it was assumed that all 50 wells would be drilled.

If exploration tests show that coalbed methane development is economically feasible, well life could be 10 to 20 years based on information on coalbed methane wells in the Powder River Basin. Because no information is available to determine well productivity or success rates, it was assumed that none of the 50 wells would be abandoned before 2021. In addition to the 50 well sites, other facilities, such as access roads, gas gathering and water disposal pipelines, water injection wells, electrical utilities, and compressors, will be constructed to aid in production of any gas developed. Because there is not currently any existing coalbed methane production in the region, the potential production rates for the 50 wells could not be estimated. Coalbed methane wells produce at low rates, and any producing wells would not contribute significant production to the larger gas volumes expected from other gas wells in operation during the planning period. If economically successful exploration projects for coalbed methane were completed in the planning area, then the actual production rates and the acreage of areas available for coalbed methane development could be used to estimate production rates.

Activity Estimate for Alternative 2

Under this alternative, it is assumed that no new leases will be offered in areas with sensitive resources. Because a significant part of the planning area with potential for coalbed methane development contains sensitive resources, it is assumed that only one coalbed methane exploration project would be completed in the planning area, with up to 25 wells installed to dewater and test production in the exploration project.

Activity Estimate for Alternative 3

The development activity estimate for Alternative 1 would also be assumed to occur under this alternative. Although the additional resource protection requirements that would be implemented under this alternative would increase development costs and might decrease interest in development of coalbed methane resources by industry, the initial two exploration projects and 50 wells anticipated for Alternative 1 could be carried out within the planning area. Cook et al. (2002) estimate that more than 400,000 acres of the planning area are underlain by coal with potential for coalbed methane development; therefore, a significant area with development potential could be leased and explored outside the sensitive resource areas. Any reduction in development related to access restrictions and costs associated with mitigation requirements would probably impact later development activity, which cannot be estimated from currently available information, since there is no development history for coalbed methane production in the planning area.

Activity Estimate for the Proposed JMH CAP

The development activity estimate for Alternative 1 would also be assumed to occur under this alternative. Although the additional resource protection requirements that would be implemented under this alternative would increase development costs and might decrease interest in development of coalbed methane resources by industry, the initial two exploration projects and 50 wells anticipated for Alternative 1 could be carried out within the planning area. Cook et al. (2002) estimate that more than 400,000 acres of the planning area are underlain by coal with potential for coalbed methane development; therefore, a significant area with development potential could be leased and explored outside the sensitive resource areas. Any reduction in development related to access restrictions and costs associated with mitigation requirements would probably impact later development activity, which cannot be estimated from currently available information, since there is no development history for coalbed methane production in the planning area.

Activity Estimate for the No Action Alternative

Under the No Action Alternative, the planning area outside the core area would be open to leasing and development, consistent with the planning guidelines of the Green River RMP, including timing and access restrictions on development activity to protect sensitive resources. New leases for coalbed methane development would not be offered in the core area, which is currently the highest interest area for coalbed methane development. Because other significant coalbed methane potential areas exist outside the core area, it is assumed that two exploration projects and 50 wells would still be installed under this management action, similar to Alternatives 1 and 3.

Impacts of Development Activities

Costs of Time Delays Related to Restrictions

Barlow and Haun (1994) project an increased demand for clean-burning, affordable natural gas in the area of the planning area. This increased demand, coupled with a slower drilling response time caused by a high level of restriction on activity, does not allow for timely development of drilling programs. This adversely impacts economics for companies trying to develop the resource. Seasonal access restrictions increase the time needed to acquire seismic data, drill individual wells, and develop discovered fields. These delays do not necessarily prevent an individual operator from developing the resource, although development may be stifled if limitations are considered to be onerous. Restrictions do at least increase costs of field development and slow the industry's response time to attractive increases in product prices. These time delays, coupled with the many other restrictions on activity in the planning area, are expected to discourage interest in the area, and limit the drilling of wells in some areas. Barlow and Haun (1994) found that "cumulative costs associated with access in the NEPA process can add $9,500 to $21,000 on a per well basis."

Surface Disturbance

These general guidelines for access roads, drill pads, and pipelines and power lines are used to determine acres of surface disturbance associated with oil and gas exploration and development drilling activities.

Access roads:

- 40 feet total width disturbance
- 12- to 14-foot-wide travelway
- 4.8 acres initial disturbance per linear road mile

- 4.0 acres initial disturbance per access road (less than 1 mile disturbed per well)
- 4.0 acres long-term disturbance per producing well (no stabilization or revegetation of barrow ditch)
- 4.0 acres of access road stabilized per abandoned dry well, after 3 years
- 4.0 acres of access road stabilized after abandonment of each producing well, after 3 years.

Road standards would be in conformance with guidelines issued in BLM Manual 9113 (Roads) and in Surface Operating Standards for Oil and Gas Exploration and Development (1989).

Drill pads:

- 3.0 acres initial disturbance per average well pad
- 0.7 acres long-term disturbance per producing well
- 2.3 acres stabilized per producing well, after 3 years
- 3.0 acres stabilized per abandoned dry well, after 3 years
- 0.7 acres stabilized after abandonment of each producing well, after 3 years.

Pipelines and power lines:

- 6.0 acres initial disturbance per producing well
- 5.5 acres stabilized per producing well, after 3 years
- 0.5 acres long-term disturbance per producing well
- 0.5 acres stabilized after abandonment of each producing well, after 3 years.

The projected surface disturbance for each of the alternatives by year during the planning period are listed in Table A13-7. The surface disturbance areas include reclamation of completed drill pads and abandoned wellhead areas.

Surface Disturbance for Coalbed Methane Wells

The disturbance guidelines for coalbed methane access roads, drill pads, and pipelines and power lines are the same as those used for non-coalbed methane exploration and development drilling activities. Actual disturbance caused by coalbed methane drilling activity is likely to be less than normal (as described below), but disturbance guidelines have not been changed, since there is so little history available to determine what actual disturbance is likely to be in the JMH CAP planning area.

With likely well spacing at 40 acres, road length needed to reach each drill site should be less than the 1 mile previously assumed for normal wells. For this type of producing well, fewer service visits are needed. As a result, two-track unimproved roads or trails could be used for access to most wells.

Use of truck-mounted drilling rigs is expected for drilling Rock Springs Formation tests that will less than 3,000 feet in depth. For wells drilled to a total depth below 3,000 feet, a full-sized rig would be required. For tests drilled in the Almond or Fort Union Formations to total depths of 1,200 feet, smaller, truck-mounted rigs may be used. These smaller rigs can drill wells that use smaller pads with smaller surface disturbance area than the drilling rigs that will be used for drilling deeper wells.

If wells are productive, wellhead facilities are expected to occupy a smaller surface area than normal wells. A weatherproof covering will be placed over the wellhead facilities. No additional structure will be constructed at the well site for gas-water separation facilities. A down hole pump will be used to produce water from the producing interval(s). Methane gas will flow to the surface using the space between the production casing and the water tubing. No pump jacks will be put at the wellheads. The

long-term surface disturbance, at each productive well location where no cut and fill construction techniques are utilized, is likely to encompass a negligible area, less than 0.1 acres. Well site production facilities typically would not be fenced or otherwise removed from existing uses.

Pipeline trenches for well gathering lines are expected to disturb portions of 40-foot-wide corridors and be reclaimed after construction is completed. Trenches will be constructed along well access roads wherever possible. Separate gathering lines, averaging one-quarter to one-half mile long each, will be buried in the trenches and will transport methane gas to production facilities and produced water to injection wells.

Typically, gas production from each well will be individually measured and mechanically or electronically recorded at a central collection point or pod facility. Gas gathering lines for each 5 to 10 wells will be tied together at the pod facility. Here gas is commingled into the gas gathering system, which will transport it to a compressor station. An improved road, averaging one-half mile in length, will be constructed to each pod facility and will disturb an area no wider than 50 feet. Each pod facility will disturb about 0.25 acres.

Coalbed Methane Produced Water-Gathering System and Discharge Facilities

Expected water production rates are unknown, although Greasewood Wash coalbed methane unit production (in the Rock Springs) averaged 120 to 140 barrels of water per day from each well testing at the end of 2000. The two Almond coal tests, to the north of the planning area, produced water at average rates of 21 and 48 barrels per day.

Any water produced from the Rock Springs Formation (most likely exploratory target) is expected to be of poor enough quality that disposal into subsurface formations will be required. Water produced from the Rock Springs coals, in the area, has not been of acceptable quality for surface disposal. No data were available from the Almond and Fort Union coal tests to determine their water quality. If water obtained from any coals in the JMH CAP planning area were of suitable quality for surface disposal, discharge would only be allowed at point sources that had been approved through the National Pollutant Discharge Elimination System and BLM permitting procedures, including Wyoming Department of Environmental Quality basin water quality limits.

Table A13-7. Cumulative Acres of Surface Disturbance (by Year) for Oil and Gas Development in Jack Morrow Hills for Each Management Alternative

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
No Action	207	408	608	755	885	952	990	1,032	1,083	1,147	1,215	1,284	1,344	1,410	1,466	1,532	1,590	1,646	1,697	1,752	1,801
Alternative 1	207	429	650	811	955	1,038	1,091	1,147	1,224	1,313	1,399	1,491	1,574	1,652	1,720	1,795	1,858	1,929	1,999	2,071	2,136
Alternative 2	207	377	545	676	783	828	844	863	902	953	1,001	1,055	1,100	1,140	1,160	1,191	1,223	1,259	1,292	1,326	1,353
Alternative 3	207	398	587	732	854	914	944	978	1,032	1,099	1,151	1,210	1,260	1,318	1,366	1,425	1,476	1,534	1,589	1,636	1,675
Proposed JMH CAP	207	398	587	732	854	914	944	978	1,032	1,099	1,151	1,210	1,260	1,318	1,366	1,425	1,476	1,534	1,589	1,636	1,675

REFERENCES

Advanced Resources International, Inc. 2001. Federal Lands Analysis Natural Gas Assessment, Southern Wyoming and Northwestern Colorado. (http://www.fe.doe.gov/oil_gas/reports/fla/fed_lands_analysis.pdf)

Stanley, R. G. 1995. The "Checkerboard Method"—A new way to estimate the numbers of undiscovered hydrocarbon accumulations in sparsely drilled areas. U.S. Geological Survey Bulletin 2120.

Wyoming Geological Association. 1979. Wyoming Oil and Gas Fields Symposium, Greater Green River Basin and Overthrust Belt.

Wyoming Geological Association. 1992. Wyoming Oil and Gas Fields Symposium, Greater Green River Basin and Overthrust Belt.

Cook, L. R., H. De Bruin, C. S. Boyd, and R. W. Jones. 2002. Oil and Gas Resource Assessment of the Jack Morrow Hills and Surrounding Areas: Wyoming State Geological Survey Open File Report 2002-1.

Cook, L. R., H. De Bruin. Personal communication with Fred Crockett, BLM, and Stuart Strum, Booz Allen Hamilton (April 19, 2002), about coalbed methane development techniques in Jack Morrow Hills.

USDI Bureau of Land Management. 1996. Green River Resource Area Resource Management Plan and Final Environmental Impact Statement: Green River Resource Area, Rock Springs District, Washington, DC: Government Printing Office.

New Mexico Bureau of Mines and Mineral Resources. 1993. *Atlas of Major Rocky Mountain Gas Reservoirs.* NMBMG: Socorro, New Mexico.

Barlow and Haun, Inc. 1994. Accessibility to the Greater Green River Basin Gas Supply, Southwestern Wyoming. Gas Research Institute Publication GRI-94/0363.

Barlow and Haun, Inc. 1998. Comment letter to the Bureau of Land Management, Jack Morrow Hills Coordinated Activity Plan Scoping Notice. March 4, 1998.

Diedrich, Robin. 1989. Personal communication with Dean Stilwell (February 4, 1999) about the assumptions and range of drilling levels in Jack Morrow Hills.

Gas Research Institute. 1996. Emerging Resources in the Greater Green River Basin, Upper Cretaceous Gas Atlas. CD-ROM, Version 1.0. GRI-96/0096.

Stilwell, D. 2002. Reasonably Foreseeable Development Report for Jack Morrow Hills Revised Coordinated Activity Plan. BLM Reservoir Management Group, Casper Field Office.

Tyler, R., W. R. Kaiser, A. R. Scott, and D. S. Hamilton. 1997. The Potential for Coalbed Gas Exploration and Production in the Greater Green River Basin, Southwest Wyoming and Northwest Colorado: in The Mountain Geologist, vol. 34, No. 1, January 1997, pp. 7–24.

Tyler, R., W. R. Kaiser, A. R. Scott, D. S. Hamilton, R. G. McMurray, and N. Zhou. 1994. Geologic and Hydrogeologic Assessment of Natural Gas from Coal Seams in the Mesaverde Group and Fort Union Formation, Greater Green River Basin, Wyoming and Colorado: in Gas Research Institute Topical Report GRI-93/0320.

Landreth, C. 1999. Personal communication with Dean Stilwell (February 4, 1999) about Hunt Oil Company plans for development of Nitchie Gulch Unit/Field.

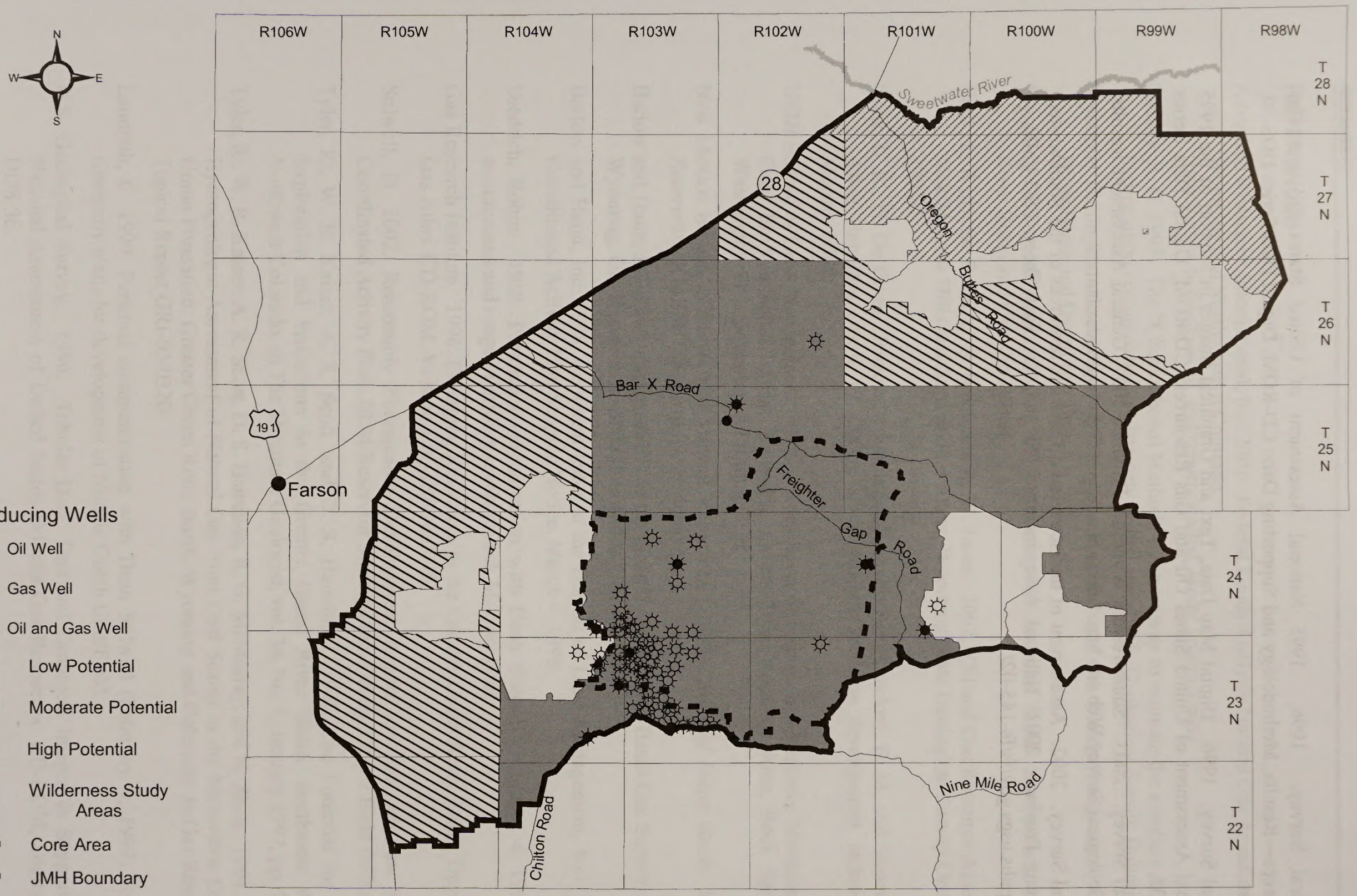
U.S. Geological Survey. 1996. Tabular Data, Text and Graphical Images in Support of the 1995 National Assessment of United States Oil and Gas Resources: CD-ROM, Digital Data Series DDS-36.

U.S. Geological Survey. 1996. 1995 National Assessment of United States Oil and Gas Resources—Results, Methodology and Supporting Data: CD-ROM, Digital Data Series DDS-30, Release 2.

U.S. Geological Survey. 1996. Digital Map Data, Text and Graphical Images in Support of the 1995 National Assessment of United States Oil and Gas Resources: CD-ROM, Digital Data Series DDS-35.

U.S. Geological Survey. 2003. Southwestern Wyoming Province 5037, General Assessment Results: U.S. Geological Survey Web site http://energy.cr.usgs.gov/oilgas/noga/index.htm

U.S. Geological Survey. 2002. Assessment of undiscovered oil and gas resources of the Southwestern Wyoming Province, 2002: National Assessment of Oil and Gas Fact Sheet, FS-145-02, or http://pubs.usgs.gov/fs/fs-145-02/.



Map A13 - 1

Oil and Gas Development Potential

Minerals and Alternative Energy Resources



R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 28 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Buccaneer
Bar X Road
Gold Coast
191
Farson
Freighter Gap Road
Rim Rock
Johnson Gap
Treasure
West 187
Steamboat Mountain
Nitchie Gulch
Nine Mile Road
Chilton Road

Suspended Exploratory Unit
Producing Unit
Core Area
JMH Boundary

Map A13 - 2

Federal Units

Minerals and Alternative Energy Resources



Map A13 - 3

Abandoned Wells

Minerals and Alternative Energy Resources



R106W R105W R104W R103W R102W R101W R100W R99W R98W

T 27 N
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N

Sweetwater River
28
Oregon Buttes Road
Bar X Road
191
Farson
Freighter Gap Road
Nine Mile Road
Chilton Road

Coalbed Mathane Test Well
Cretaceous
Tertiary
Core Area
JMH Boundary

5 0 5 Miles

Map A13 - 4

Coalbed Methane Development Potential

Minerals and Alternative Energy Resources



APPENDIX 14—OIL AND GAS OPERATIONS

GEOPHYSICAL EXPLORATION

Oil and gas can be discovered by either direct or indirect exploration methods, such as the mapping of rock outcrops, seeps, borehole data, and remote sensing data. In many cases indirect methods, such as seismic, gravity, and magnetic surveys, are required to delineate subsurface features that may contain oil and gas.

Gravity Surveys

Gravitational prospecting detects microvariations in gravitational attraction caused by differences in the density of various types of rock. Gravity data are used to generate anomaly maps from which faults and general structural trends can be interpreted. These surveys are generally not considered definitive, because of the many data corrections required (e.g., terrain, elevation, latitude) and the poor resolution of complex subsurface structures. The instrument used for gravity surveys is a small portable device called a gravimeter, which is transported by backpack, helicopter, or off-road vehicle. Generally, measurements are taken at many points along a linear transect. The only surface disturbance associated with gravity prospecting is that caused by a vehicle, if used.

Geomagnetic Surveys

Magnetic surveys use an instrument called a magnetometer to detect small magnetic anomalies caused by mineral and lithologic variations in the Earth's crust. These surveys can detect large trends in basement rock and the approximate depth to reach those basement rocks, but in general they provide little specific data to aid in petroleum exploration. Many data corrections are required to obtain reliable information, and the maps generated lack resolution and are considered preliminary. Magnetometers vary greatly in size and complexity. Most magnetic surveys are conducted from the air by suspending a magnetometer under an airplane. Magnetic surveys conducted on the ground are nearly identical to gravity surveys, and surface disturbance is minimal to nonexistent.

Seismic Reflection Surveys

Seismic prospecting is the best and most popular indirect method currently used for locating subsurface structures or stratigraphic variations that may contain oil and/or gas. Over the past 10 years, industry primarily has used what is called three-dimensional (3-D) geophysical surveys. This method of survey uses a grid of energy input lines (source points) that are placed about 0.25 miles apart. The source lines are crossed by the receiver lines (geophones) in a pattern that is designed by the client geophysicist. The receiver lines are placed in 0.25-mile bundles by helicopter. Pedestrian workers then string the lines. The lines are picked up by helicopter after the data is collected. The only travel by wheeled vehicles on the receiver lines is by an all-terrain vehicle (ATV) for troubleshooting, if necessary. Three-dimension prospects can vary greatly in size from 10 square miles to 400 square miles of coverage. The older two-dimensional (2-D) seismic method is still used for small prospects, generally on single oil company client holdings. Usually 2-D seismic prospects consist of very few lines, which may or may not cross each other. These prospects consist of about 10 to 50 total miles of lines. In recent times the ratio of 3-D to 2-D methods is close to 4 to 1. These prospects can be performed either by vibration or by drilling shot holes.

Seismic energy (sine waves) is induced into the Earth using one of several methods. As these waves travel downward and outward, they encounter various rock strata, in which the energy travels at different velocities. As the wave energy encounters the interface between rock layers, some of the seismic energy is reflected upward. Sensing devices commonly called geophones are placed on the surface to detect these reflections. The geophones are connected to a data recording truck that stores data on magnetic tape. The time required

for the input energy waves to travel from the source point down to a given reflector and back to the geophone is related to depth and geologic structure.

Many methods are available that can be used to induce the initial seismic energy into the Earth. All methods require preliminary surveying and laying of geophones. The vibrator methods vibrate the Earth's surface to induce an energy source that radiates into the substrata. Usually four large buggies are used, each equipped with vibrator pads (about 4 feet square). The pads are lowered to the ground with most of the weight of the buggy on the pad. Vibrators on all buggies are synchronized electronically from the recording truck to provide a sweep of frequencies from subsonic to approximately 200 hertz. Information is recorded, the buggies move forward a predetermined distance, usually 220 feet, and the process is repeated.

Vibrator buggies weigh up to 67,000 pounds and have tires up to 4 feet wide. They travel with less surface loading than does a pickup truck. These buggies are spread out from point to point to minimize leaving a trail. Surface vegetation (including shrubs) is pushed down but not crushed and broken. A small portion of the vegetation is lost as a result of this action. Observation of a track a year later makes it hard to find where the buggies traveled. Working during winter conditions with snow is even more beneficial and causes even less surface damage.

Shot-hole prospects use drill buggies on rough terrain and drill trucks on flatter landscape. Trucks cause more damage than do buggies. Shot holes are drilled using air, but when heavy moist strata are being drilled, the cuttings tend to plug the hole. A water truck or buggy may travel with the drill rig. The water is used to keep the hole open during drilling. Small-diameter holes are drilled to depths of 60 to 200 feet. Four to 12 holes are drilled per mile of line. Usually, a 20-pound charge of explosives is placed in the hole, covered, and detonated to generate seismic energy. Helicopters may carry a portable drill into rugged terrain.

Another technique is to place charges of generally 5 pounds on wooden sticks, or lath, 3 feet or so above the ground. Usually, six charges in a line are detonated at once. Seismic lines are aligned relative to the regional structure to make interpretation more accurate. Although alignment of the source points is critical, spacing of source points can often be changed 0.25 miles before the results significantly affect the program. These offsets can be corrected by the computer program used to analyze the data. In extreme situations, source points can be eliminated where sensitive resources need to be protected, and there is no way to offset the source point.

A typical 2-D drilling seismic operation may use 10 to 15 people operating 5 to 7 trucks. Under normal conditions, 3 to 5 miles of line can be surveyed each day using the explosive method. The vehicles used for a drilling program include several heavy truck-mounted drill rigs, water trucks, a computer recording truck, and several light pickups for the surveyors, shot-hole crew, geophone crew, permit man, and party chief. A typical 3-D operation may have 50 people on the ground stringing lines, operating equipment, and supervising.

Public roads and existing roads and trails are used for access to the prospect. Off-road cross-country travel may be necessary to carry out tasks. Concern about unnecessary surface disturbance has caused government and industry to more carefully plan surveys. Trips along a seismic line are held to a minimum. Spreading vehicles out so that they do not trail eliminates the establishment of new trails and reduces the impact. Ten years of experience shows that keeping the vibrators spread out on the lines keeps resource damage at acceptable levels.

Each of the foregoing methods has inherent strengths and weaknesses, and geophysicists must decide which method is the most practical with regard to surface constraints (such as topography) but will still produce information that can be useful for the particular study. Extensive computer processing of the raw data is required to produce a usable subsurface profile from which geophysicists can interpret structural relationships

to depths of 30,000 feet or more. The effective depth of investigation and resolution are determined in large degree by the method used.

Geophysical Management (Permitting Process)

Geophysical operations are reviewed by the federal surface management agency—the Bureau of Land Management (BLM), the Bureau of Reclamation, or the Forest Service, as appropriate. Good administration and surface protection on geophysical operations can only be accomplished through close cooperation of the operator and the affected agency. The responsibilities of the Geophysical Operator and the Field Manager are as follows (USDI 1989b):

- **Geophysical Operator.** An operator is required to file with the Field Manager a Notice of Intent to Conduct Oil and Gas Exploration Operations. The Notice of Intent shall include a map showing the location of the line, all access routes, and ancillary facilities. The operator must be bonded and file evidence of bonding with the notice. Any surface disturbance may require a cultural resources survey and a prework field conference. Earth-moving equipment will only be used with prior approval. Upon completion of operations and rehabilitation, the operator must file a Notice of Completion of Oil and Gas Exploration Operations.

- **Field Manager.** The Field Manager shall apprise the operator of the practices and procedures to be followed before beginning operations on BLM-administered lands. The Field Manager will consent to bond release once the terms and conditions of the notice have been met.

State Standards

In Wyoming, the operator is required to register with the State of Wyoming Oil and Gas Conservation Commission. State standards for plugging shot holes, personnel safety, etc., will be followed.

Mitigation

Seasonal restrictions may be imposed to reduce conflicts with wildlife, watershed damage, and hunting activity. Compliance inspections during the operation ensure that stipulations are being followed. Compliance inspections upon completion of work ensure that the lines are clean and the drill holes are properly plugged.

Oil and Gas Leasing

The Mineral Leasing Act declares that all public lands are open to oil and gas leasing unless a specific order has been issued to close an area. Based on the Federal Onshore Oil and Gas Leasing Reform Act of 1987, all leases must be exposed to competitive lease sales. Lands that do not receive bids at the lease sale will be available for noncompetitive leasing for a period not to exceed 2 years. Competitive sales will be held at least quarterly and by oral auction. Competitive and noncompetitive leases are issued for a term of 10 years or for as long as oil and/or gas are produced. The Federal Government receives yearly rental fees on non-producing leases. Royalty is received at the rate of 12.5 percent of the total saleable production, one half of which is returned to the State of Wyoming.

Lease stipulations may be attached to each parcel and become part of the lease after sale. Initially, stipulations are attached to a parcel by the state office leasing section from various databases. The parcel list is segregated and sent to the field office that has the majority of the parcel lands in its area. In the field office, the parcel is reviewed by a group of resource and National Environmental Policy Act (NEPA) specialists to ensure that lands are in conformance with the Resource Management Plan (RMP), the stipulations are correct,

and any missing stipulations are included. This completes the process and allows the parcel to be included in a sale package.

The authorized officer has the authority to relocate, control timing, and impose other mitigation measures under Section 6 of the Standard Lease Form, and this authority is invoked when lease stipulations are not attached to the lease or new resources are discovered on a lease. Lease stipulations are conditions of lease issuance that provide protection for other resource values or land uses by establishing authority for delay, site changes, or the denial of operations within the terms of the lease contract. These stipulations adhere to the Uniform Format for Oil and Gas Lease Stipulations prepared by the Rocky Mountain Regional Coordinating Committee in March 1989. The stipulations are specified for each applicable parcel in the Notice of Competitive Oil and Gas Lease Sale and are intended to inform interested parties (potential lessees, operators) that certain activities will be regulated or prohibited unless the operator and the surface management agency (SMA) arrive at an acceptable plan for mitigation of anticipated impacts. These stipulations are attached to the whole lease regardless of the fact that the protection measure may be only in a specific portion of the lease. Lease stipulations are based on the perceived resource requirements and lands uses as specified in NEPA documentation. New science, comprehensive documentation of resource requirements, land pattern interference, and ongoing monitoring of the effectiveness of a stipulation may allow a stipulation to be granted a waiver, exception, or modification. A lease stipulation waiver is a permanent exemption to a lease stipulation. An exception is a one-time exemption to a lease stipulation and is determined on a case-by-case basis. A modification is a change to the provisions of a lease stipulation either temporarily or for the term of the lease.

DRILLING PERMIT PROCESS

A federal lessee or operator is governed by procedures set forth by Onshore Oil and Gas Order No. 1, "Approval of Operations on Onshore Federal and Indian Oil and Gas Leases," issued under 43 Code of Federal Regulations (CFR) 3164. Operating Order No. 1 lists the following as pertinent points to be followed by the lessee or operator: Notice of Staking (NOS); Application for Permit to Drill (APD), which includes a multipoint surface use and operations plan; approval of subsequent operations; well abandonment; water well conversion; responsibilities on privately owned surface; and reports and activities required after well completion.

The federal lessee or operating company selects the location of a proposed drill site. The selection of the site is based on spacing requirements, subsurface geology as interpreted by geologists and geophysicists, topography, and availability of funds for a specific well. Spacing requirements are established by the Wyoming State Oil and Gas Conservation Commission. Each well is to be drilled within a given distance from the center of a legal subdivision. A proposed location may be moved with a spacing exception granted by the Oil and Gas Conservation Commission. Occasionally, BLM may request that a lessee drill a well on the lease if it is determined that federally owned minerals are being drained by an adjacent well on privately owned or state-owned lands (USDI 1981a).

- **Notice of Staking.** After the company makes the decision to drill, it must decide whether to submit a staking notice or an APD. The NOS consists of an outline of what the company intends to do, including a location map and a sketched site plan. The notice is then used as a document to review any conflicts with known critical resource values, and at the onsite inspection to provide the preliminary data for assessing what additional items are necessary to complete the APD.

- **Application for Permit to Drill.** Regardless of whether an NOS is filed, the lessee or operator shall file an APD. No surface activity in conjunction with drilling is allowed until the APD is approved. A field inspection is held with the operator and any other interested party. The pre-site field inspection is used to evaluate the operator's plan, assess the situation for possible impacts (surface and subsurface), and formulate resource protection stipulations. To lessen environmental impacts, a

site may be moved, reoriented, or redimensioned, within certain limits. The proposed access road may also be rerouted (USDI 1981a).

If necessary, site-specific mitigations are added to the APD for protection of surface and/or subsurface resource values in the vicinity of the proposed well. BLM is responsible for preparing the environmental documentation necessary to satisfy the NEPA requirements and provide any mitigation measures (conditions of approval) needed to protect the affected resource values.

Each APD identifies existing and proposed surface disturbances (such as well pads, roads, pipelines, and surface impoundments) and includes locations of existing wells and water supplies, ancillary facilities, well-site layout, and a surface reclamation plan. Operations must be conducted in a manner that minimizes drilling hazards and potential for spills and accidental releases.

Consideration is given to the protection of groundwater resources. The geologist is required to identify the maximum depth of usable water as defined in Onshore Oil and Gas Order No. 2. Usable water is defined as water that contains 10,000 parts per million (ppm) or fewer of total dissolved solids (TDS). Determining the depth to fresh water requires specific water quality data in the proposed well vicinity or geophysical log determination of water quality, depending on existing well proximity and log availability. Water of this quality is to be protected, usually by surface casing and cement.

Operations on leases must also comply with applicable regulations administered by state and local agencies. Development actions must comply with water quality protection requirements of the Upper Colorado River Basin Commission, which effectively control discharges of produced water from petroleum production. Produced water could be surface discharged if it has a TDS of fewer than 5,000 ppm; meets all other chemical, health, land quality, water quality, and safety criteria as outlined in BLM and Department of Environmental Quality (DEQ) guidelines; and has an applicant that has received approval from the DEQ and surface land manager for its use. Surface discharge of produced waters in excess of the applied use would not be allowed. Augmentation of natural flows by discharge of produced water into existing natural channels would not be considered an appropriate use. Excess water would be disposed of in an appropriate manner. If produced waters are disposed of by injection into geologic formation, the native waters of that formation would be of an equal quality to or a lower quality than that of the water being injected.

Once approved, the operator has 1 year to begin construction and drilling operations. If construction does not begin within 1 year, the stipulations must be reviewed before approval of another APD (USDI 1981a).

Surface Disturbance Associated with Exploratory Drilling

Upon receiving approval to drill the proposed well, the operator moves construction equipment over existing roads to the point where the access road will begin. Generally, the types of equipment include dozers (track mounted and rubber tired), scrapers, and motor graders. Moving equipment to the construction site requires moving several loads (some overweight and overwidth) over public and private roads. Existing roads and trails are improved in places, and occasionally culverts and cattleguards are installed if required.

The length of the access road varies. Generally, the shortest feasible route is selected to reduce the haul distance and construction costs. Environmental factors or the landowner's wishes may dictate a longer route. In rough terrain, the type of construction is sidecasting (using the material taken from the cut portion of the road to construct the fill portion); slightly less than one-half of the roadbed is on a cut area, and the rest is on a fill area. Roads are usually constructed with a 14-foot (single lane) or 24-foot (double lane) running surface (in relatively level terrain). Soil texture, steepness of the topography, and moisture conditions may dictate surfacing the access road in some places but generally not for the entire length.

Well locations are constructed differently, but in every case, all soil material suitable for plant growth is first removed from areas to be disturbed and stockpiled in a designated area. Sites on flat terrain usually require little more than removing the topsoil material and vegetation. Drilling sites on ridge tops and hillsides are constructed by cutting and filling portions of the location. It is important to confine extra cut material in stockpiles rather than cast it down hillsides and drainages where it cannot be recovered for rehabilitation.

The level surface needed to assemble and operate a drilling rig varies, but averages 300 by 350 feet. At least 25 feet of cut surface between the drill hole and the edge of the drilling platform is normally needed. This ensures that the foundation of the drilling derrick is on solid ground and prevents it from leaning or toppling because of settling of uncompacted soil. In addition to the drilling platform, an 8- to 12-foot deep reserve pit is usually constructed. The reserve pit may be deeper to compensate for smaller length and width or deeper drilling depths. Depending on the relation of the location to natural drainages, it may be necessary to construct water bars or diversions.

Moving a drilling rig requires moving 10 to 25 truckloads (some over legal weight and height) of equipment over public highways and private roads. The derrick when erected is approximately 160 feet high.

Water for drilling is hauled to the rig storage tanks or transported by surface pipeline. Water sources are usually rivers, wells, or reservoirs. Occasionally, water supply wells are drilled on or close to the site. The operator must obtain a permit from the Wyoming State Engineer for the use of surface or subsurface water for drilling. When BLM holds the water permits for surface water (stock ponds), they must also approve such use. When drilling begins, and as long as it progresses, water is continually transported to the rig location. Approximately 40,000 barrels, or 1,680,000 gallons, of water is required to drill an oil or gas well to the depth of 9,000 feet.

Issuance of Rights-of-Way

BLM rights-of-way are required for all facilities, tank batteries, pipelines, truck depots, powerlines, and access roads that occupy federally owned land outside the lease or unit boundary. When a third party constructs a facility or installation on or off the lease, a right-of-way is also required.

DRILLING OPERATIONS

Rotary Drilling

Starting to drill is called "spudding in" the well. Initially, drilling usually proceeds rapidly, mainly because of the incompetent nature of shallow formations. While drilling, the rig derrick and associated hoisting equipment bear a majority of the drill string's weight. The rotary motion is created by a square or hexagonal rod, called a kelly, which fits through a square or hexagonal hole in a large turntable, called a rotary table. The weight on the bit itself is generally a small fraction of the total drill string weight.

Drilling mud is circulated through the drill pipe to the bottom of the hole, through the bit, up the bore of the well, through a screen that separates the rock chips, and into holding tanks from which it is pumped back into the well. The mud is maintained at a specific weight and thickness to cool the bit, reduce the drag of the drill pipe on the sides of the well hole, seal off any porous zones, contain formation fluids to prevent a blowout or loss of drilling fluid, and bring the rock chips to the surface for disposal. Various additives are used in maintaining the drill mud at the appropriate viscosity and weight. Some of the additives are caustic, toxic, or acidic, but these hazardous additives are used in relatively small amounts during drilling operations.

Eventually, the bit becomes worn and must be replaced. To change bits, the entire string of drill pipe must be pulled from the hole, in sections usually about 90 feet long, until the bit is out. The bit is replaced, then the

drill string is reassembled and lowered into the hole, section by section, and drilling is started again. The process of removing and reinserting the drilling string uses much of the time required in drilling.

Drilling operations are continuous, 24 hours a day and 7 days a week. The crews usually work three 8-hour shifts or two 12-hour shifts a day. Pickup trucks or cars are used for workers' transportation to and from the site.

Upon completion of the drilling, the equipment is removed to another location. If oil or gas is not discovered in commercial quantities, the well is considered dry. In that case, the operator is required to follow state and BLM policy procedures for plugging a dry hole. The drill site and access road are rehabilitated in accordance with the stipulations attached to the APD (USDI 1981a).

Casing

Various types of casing (steel pipe) are screwed together and placed in the drill hole to keep it open. The casing is cemented in place to protect against fluid movement between the casing and walls of the hole and to keep rocks and the well bore from pushing against the casing and damaging it.

Surface casing that is properly set and cemented also protects surface aquifers from being contaminated by drilling and production operations. Surface casing should be set to a depth greater than the deepest fresh water aquifer that could reasonably be developed. Fresh water may exist at great depths, but these aquifers are not normally considered to be important fresh water sources. Surface casing is large enough to allow subsequent lengths of smaller casing to be set as the well is drilled deeper. Cement is placed to fill the entire void between the pipe and the walls of the hole.

Production casing or liner is intended to provide a conduit for the production of oil and gas to prevent product from being lost in "up-hole zones." Generally, only the bottom few hundred feet of intermediate or production casing is cemented, which often leaves several thousand feet of open hole behind some casing strings. Currently, the operator is only required to seal off "hydrocarbon-bearing zones." Cement is placed across these zones to seal them and to prevent contamination of any water-bearing zones or other porous zones by hydrocarbons.

DEVELOPMENT AND PRODUCTION

Wells are completed and production equipment installed if it is determined that oil or gas is present in commercial quantities. Natural gas is the primary product produced. Completion calls for the installation of steel casing, which is cemented in, to provide stability and to protect specific underground zones. The casing is perforated at the zone containing the oil or gas. Valves and pressure regulators are then installed to control flow of the oil and gas to production facilities.

Pipeline quality gas at the wellhead requires a minimum of processing equipment. As the quality of gas decreases with the increased presence of water, dissolved solids, or liquid hydrocarbons, the amount of processing equipment increases. Water or liquid hydrocarbons in the gas are removed before the gas is mixed with other gas, usually just downstream of the wellhead. If liquid hydrocarbons are present, they are placed in storage facilities (tank batteries) until they accumulate in sufficient quantities to be hauled out by large trucks.

Wyoming law prohibits the flaring or venting of natural gas. Exceptions allowed by the Wyoming Oil and Gas Conservation Commission are (1) during testing of a new well or (2) when the amount of gas produced with the oil is so small that pipeline construction is not practical. Otherwise, if a well produces both oil and gas, provisions for shipping the gas must be made before oil production can continue.

The production equipment (separator, holding facility for production water [if any is present], and tank battery) is either placed on a portion of the location (on cut rather than fill) or located a short distance from the wellhead along the access road. Production facility colors are required to be from the standard color chart. Earthen dikes to contain accidental spills surround the separator and tanks. Either all the facilities may be fenced or only the production water pit may be fenced (USDI 1981a).

Oil and Gas Exploratory Units

Surface use in an oil or gas field may be affected by unitization of the leaseholds. In areas of federally owned minerals, an exploratory unit can be formed before a wildcat exploratory well is drilled. The boundary of the unit is based on geologic data. The developers of the unit can enter into an agreement to develop and operate, without regard to separate lease ownerships. All owners share in any well's production and costs are allocated according to agreed-on terms.

Unitization reduces the surface use requirements because all wells are operated as though on a single lease. Duplication of field processing facilities is minimized, because development and operations are planned and conducted by a single operator. Unitization may also involve wider spacing than usual, resulting in fewer wells. Access roads are usually shorter and better organized (USDI 1981a).

It is the general intent of unitization to pool or unitize the interests in an entire structure or area to provide for adequate control of operations, so that development and production can proceed in the most efficient and economical manner, and with minimized environmental impact. Accordingly, each proposal to unitize federally supervised leases must be evaluated on its specific merits. The unit agreement provides for the exploration, development, and production by a single operator. In effect, the unit functions as one large lease.

Early consolidation of exploration and development efforts through unitization eliminates the need to drill protective wells (drainage avoidance) within unit boundaries. In a field, each lessee must drill his or her own well to obtain production and avoid being drained by nearby wells.

Field Development

The most important factor in further development of an oil or gas field is the quantity of production. Other considerations are whether the field is on a lease basis or unitized, the probability of profitable production, the necessity of protecting federal mineral acreage from drainage by off-lease drilling, and the degree to which limits of the field are known.

When a discovery is made, a well-spacing pattern must be established before additional development begins. Spacing is regulated by the Wyoming State Oil and Gas Conservation Commission. Well spacing for gas wells is generally at 160 to 640 acres per well and 160 acres or less for coalbed gas. APD procedures for development of wells are the same as those for wildcat (exploration) wells.

New field developments are analyzed in an environmental assessment or an environmental impact statement after the second or third confirmation well is drilled. The operator should then have an idea of the extent of drilling and disturbance required to extract and produce the oil and gas. Many fields go through several development stages. A field may be considered fully developed and produce for several years; later, a deeper pay zone may be discovered that leads to the drilling of more wells. A new state of development can lead to changes in the infrastructure of the field that must be considered for approval by BLM.

As the productive life of a field progresses, problems may arise such as erosion, unvegetated areas, washing out of drainage crossings and roads, plugging of culverts, deterioration of cattleguards, accumulation of derelict equipment, construction of unnecessary roads, unauthorized off-road cross-country travel, and improperly placed or unrehabilitated pipelines. BLM prepares rehabilitation plans to correct these problems

and to return the field surface area to its original productivity. Ongoing restoration allows total reclamation to be completed more quickly when a field is finally abandoned (USDI 1981a).

Production

Gas, oil, and water are being produced in the area.

Gas Production

A typical gas well location would consist of a wellhead, methanol injection equipment (to keep production and surface lines from freezing), a separator (which separates gas, oil, and water), a dehydrator (which uses heat and glycol or calcium chloride to extract any water remaining with the gas), and an orifice meter. An intermitter is sometimes used either to shut in the well to build up pressure or to blow the well down if it is being loaded with fluid. If the gas well is producing some oil or condensate, oil tanks are used to store the oil and condensate until it is sold and transported via truck or pipeline.

Water Production

Associated water produced with the oil or gas is disposed of by trucking the water to a DEQ-authorized disposal pit, by placing the water in lined or unlined pits, or through subsurface injection. The quality of the water often dictates the appropriate disposal method.

Production Problems

Weather extremes pose problems for producers by causing roads to become impassable, equipment to malfunction, and flowlines, separators, and tanks to freeze.

Plugging and Abandonment of Wells

The purpose of plugging and abandoning a well is to prevent fluid migration between zones, to protect minerals from damage, and to restore the surface area. Each well should be handled individually because of a combination of factors, including geology, well design limitations, and specific rehabilitation concerns. Therefore, only minimum requirements can be established and then modified for the individual well.

The first step in the plugging process is the filing of the Notice of Intent to Abandon. This will be reviewed by both the Surface Management Agency and the Rock Springs Field Office (RSFO). The notice must be filed and approved before plugging a well. The operator's plan for plugging the hole is reviewed and must meet the minimum requirements for plugging a well bore, as stated in Onshore Oil and Gas Order No. 2. Oral plugging instructions can be given for plugging current drilling operations, but a notice must be filed after the work is completed. If usable fresh water is encountered while the well is being drilled, the Surface Management Agency will be allowed, if interested, to assume future responsibility for the well, and the operator will be reimbursed for the attendant costs.

APPENDIX 15—AIR QUALITY REGULATIONS

AIR QUALITY REGULATIONS

The basic framework for controlling air pollutants in the United States is mandated by the 1970 Clean Air Act and its amendments, and the 1999 Regional Haze Regulations. The Clean Air Act addresses criteria air pollutants, state and national ambient air quality standards for criteria air pollutants, and the Prevention of Significant Deterioration (PSD) program. The Regional Haze Regulations address visibility impairment.

Pollutants

Criteria pollutants are those for which national standards of concentration have been established. Pollutant concentrations greater than these standards represent a risk to human health. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulphur dioxide (SO_2), particulate matter (PM-10, PM-2.5), and lead (Pb). Other pollutants of concern are hazardous air pollutants (HAP), a broad class of several pollutants including benzene, toluene, asbestos, beryllium, and hydrogen sulfide (H_2S).

CO is an odorless, colorless gas formed during any combustion process, such as operation of engines, fireplaces, and furnaces. High concentrations of CO affect the oxygen-carrying capacity of the blood and can lead to unconsciousness and asphyxiation.

NO_2 is a red-brown gas formed during operation of internal combustion engines. Such engines emit a mixture of nitrogen gases, collectively called nitrogen oxides (NOx). NO_2 can contribute to brown cloud conditions and can convert to ammonium nitrate particles and nitric acid, which can cause visibility impairment and acid rain.

O_3 is a faintly blue gas that is generally not emitted directly into the atmosphere but is formed from NOx and volatile organic compounds (VOC) emissions. As noted above, internal combustion engines are the main source of NO_x. Sources of VOC include oil vapors and terpene mist. The faint acrid smell common after thunderstorms is due to ozone formation by lightning. O_3 is a strong oxidizing chemical that can burn the lungs and eyes and damage plants.

SO_2 forms during combustion from trace levels of sulphur in coal or diesel fuel. It can convert to ammonium sulfate and sulphuric acid, which can cause visibility impairment and acid rain.

Particulate matter (i.e., soil particles, hair, pollen) is essentially the small particles suspended in the air, which settle to the ground slowly and may be resuspended if disturbed. Separate allowable concentration levels for particulate matter are based on the relative size of the particle:

- PM-10, particles with diameters less than 10 micrometers, are small enough to be inhaled and can cause adverse health effects.
- PM-2.5, particles with diameters less than 2.5 micrometers, are so small that they can be drawn deeply into the lungs and cause serious health problems. These particles are also the main cause of visibility impairment.

Before the wide use of unleaded fuel for automobiles, lead particles were emitted from tailpipes. Lead is not considered in this Environmental Impact Statement (EIS) because no proposed projects are expected to emit lead.

There are a wide variety of HAPs that have no applicable air quality standards but are typically evaluated for potential cancer risks from long-duration exposures. Wyoming maintains a concentration standard for H_2S.

Wyoming and National Ambient Air Quality Standards

Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) set the absolute upper limits for criteria air pollutant concentrations at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards. Concentrations above the WAAQS and NAAQS represent a risk to human health (see Table A15-1).

The Environmental Protection Agency (EPA) has developed standards for each criteria pollutant for a specific averaging time. Short averaging times (1, 3, and 24 hours) address short-term exposure, whereas annual standards address long-term exposure. Annual standards are set to lower allowable concentrations than are short-term standards to recognize the cumulative effects of long-term exposure.

Table A15-1. National and Wyoming Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	NAAQS ($\mu g/m^3$)	WAAQS ($\mu g/m^3$)
Carbon Monoxide (CO)	8 hour	10,000	10,000
	1 hour	40,000	40,000
Nitrogen Dioxide (NO_2)	Annual	100	100
Sulphur Dioxide (SO_2)	Annual	80	60
	24 hour	365	260
	3 hour	1300	695
Ozone (O_3)	8 hour	157	157
	1 hour	235	
Particulate Matter (PM_{10})	Annual	50	50
	24 hour	150	150
Fine Particulate Matter ($PM_{2.5}$)	Annual	65	
	24 hour	15	

Prevention of Significant Deterioration

The goal of the PSD program is to ensure that air quality in areas with clean air does not significantly deteriorate, while maintaining a margin for future industrial growth. Under PSD, each area in the United States is classified by the air quality in that region (see Table A15-2):

- **PSD Class I Areas.** Areas with pristine air quality, such as wilderness areas, national parks, and Indian reservations, are accorded the strictest protection. Only very small incremental increases in concentration are allowed to maintain the very clean air quality in these areas.
- **PSD Class II Areas.** Essentially, all areas that are not designated Class I are designated Class II. Moderate incremental increases in concentration are allowed, although the concentrations are not allowed to reach the concentrations set by Wyoming and federal standards (WAAQS and NAAQS).
- **PSD Class III Areas.** No areas have yet been designated Class III. Concentrations would be allowed to increase all the way up to the WAAQS and NAAQS.

Table A15-2. PSD Increments

Pollutant	Averaging Time	PSD Increment ($\mu g/m^3$)	
		Class I	Class II
Nitrogen Dioxide (NO_2)	Annual	2.5	25
Sulphur Dioxide (SO_2)	Annual	2	20
	24 hour	5	91
	3 hour	25	512
Particulate Matter (PM_{10})	Annual	4	17
	24 hour	8	30

In the Jack Morrow Hills region, there are four PSD Class I areas (Bridger, Fitzpatrick and Washakie Wilderness Areas, and Grand Teton National Park). There are also two special status Class II areas (Popo Agie Wilderness Area and the Wind River Roadless Area). The Jack Morrow Hills project area is also classified as PSD Class II.

Comparisons of potential NO_2 and SO_2 concentrations with PSD increments are intended only to evaluate a threshold of concern and do not represent a regulatory PSD Increment Consumption analysis. Consumption analyses are applied to large industrial sources and are solely the responsibility of the state and EPA.

Regional Haze Regulations

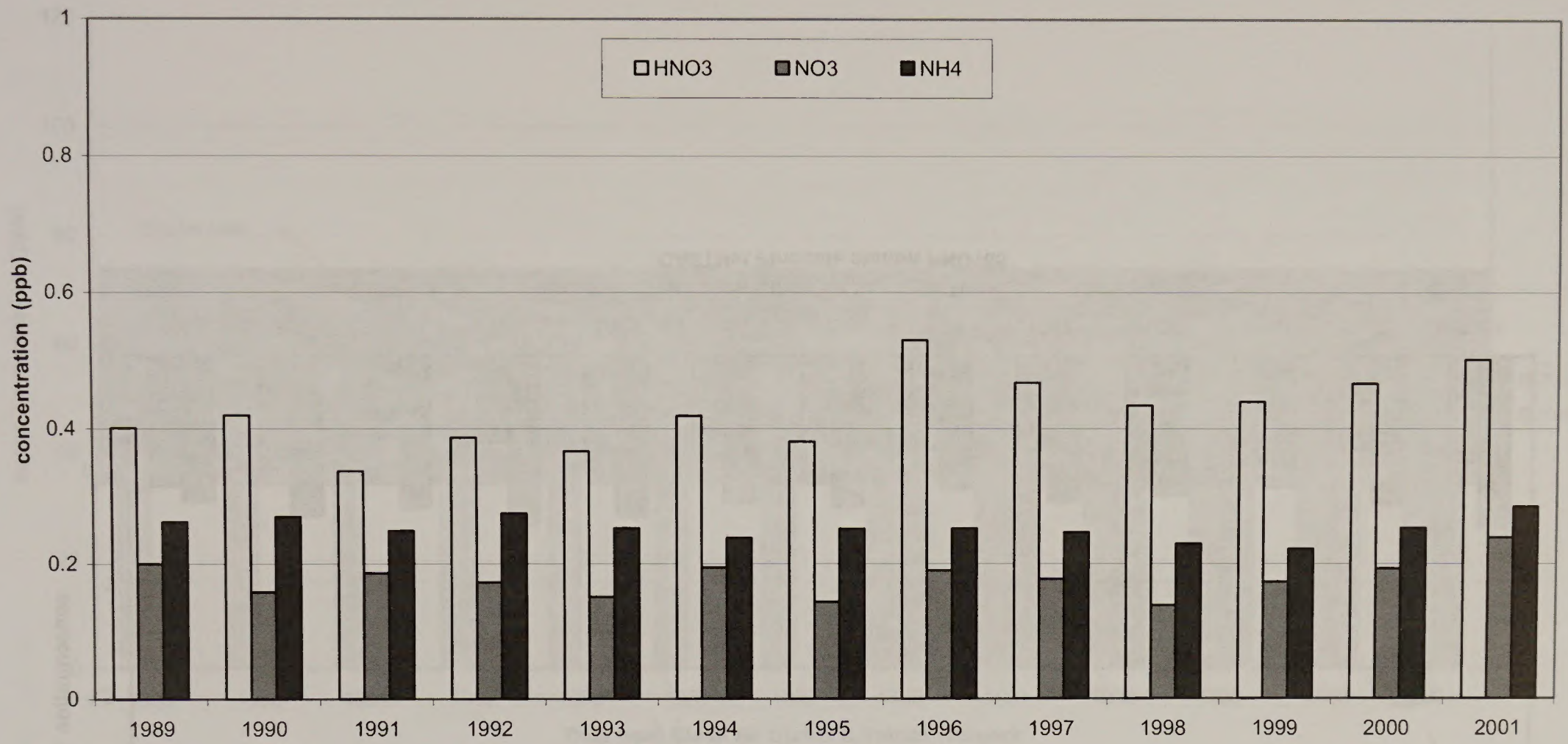
Visibility impairment is an indicator of air pollution concentration. Visibility can be defined as the distance one can perceive color, contrast, and detail. Fine particulate matter ($PM_{2.5}$) is the main cause of visibility impairment. Visual range, one of several ways to express visibility, is the farthest distance a person can see a landscape feature. Without human-caused visibility impairment, natural visual range would average about 150 miles in the Western United States and about 70 miles in the Eastern United States.

The Regional Haze Regulations were developed by EPA in response to the Clean Air Act Amendments of 1990. They are intended to maintain and improve visibility in PSD Class I areas across the United States so that visibility in these areas is returned to natural conditions. These regulations require states to demonstrate reasonable progress in maintaining or improving visibility in PSD Class I areas.

Figures A15-1 to A15-24 support the text found in Section 3.8.

THIS PAGE INTENTIONALLY LEFT BLANK

Figure A15-1. Mean Annual Concentrations of Nitrogen Compounds in Pinedale, Wyoming



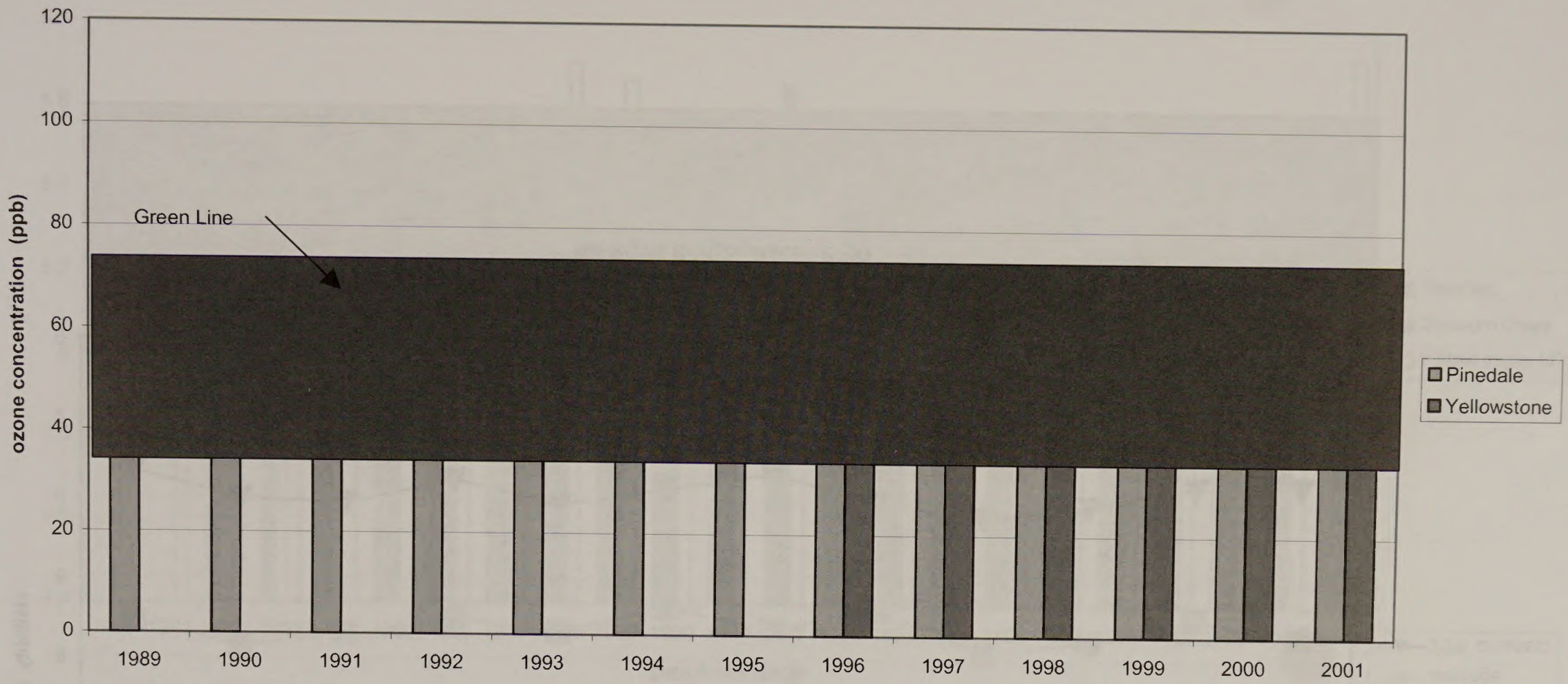
Data taken from Clean Air Status & Trends Network
CASTNet Pinedale station PND165

Figure A15-2. Mean Annual Concentrations of Sulfur Compounds in Pinedale, Wyoming



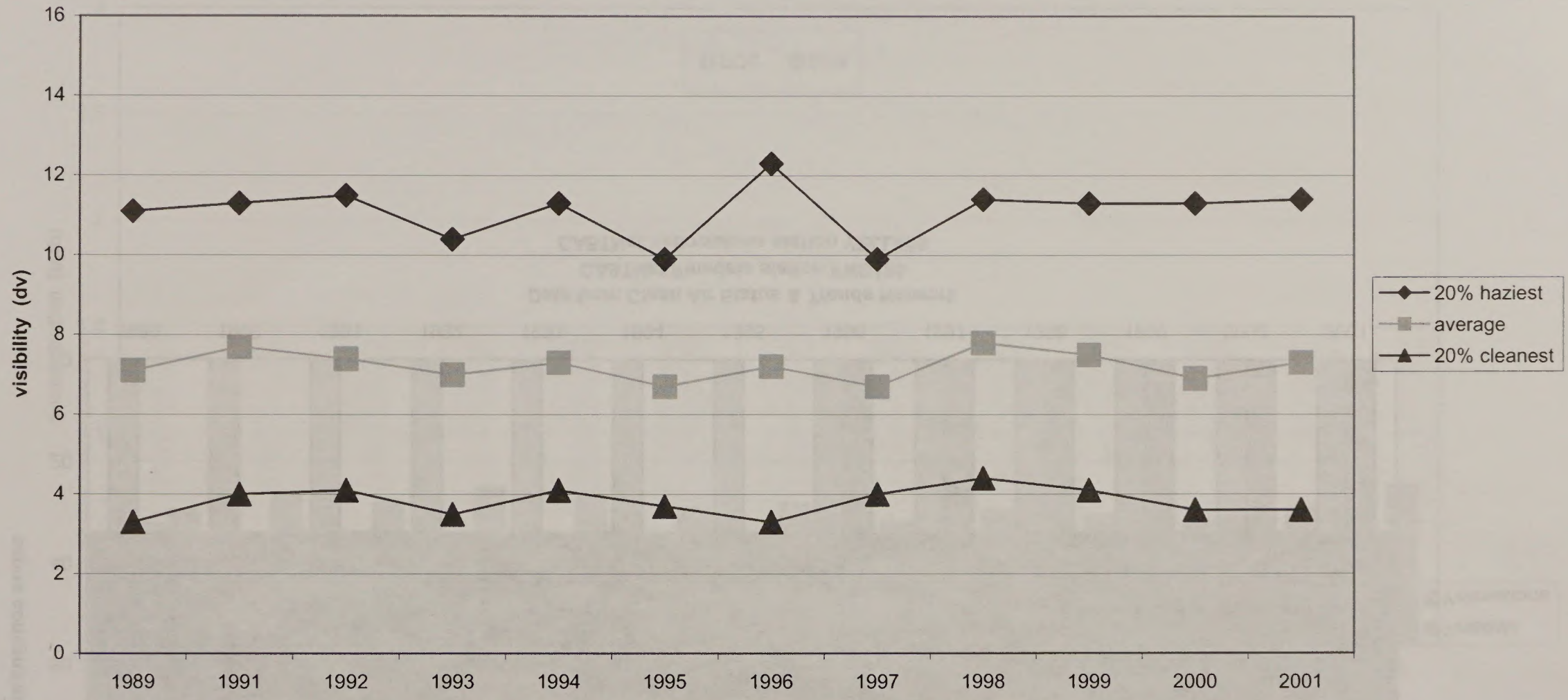
Data from Clean Air Status & Trends
CASTNet Pinedale station PND165

Figure A15-3. Mean Annual Ozone Concentration in Pinedale, Wyoming



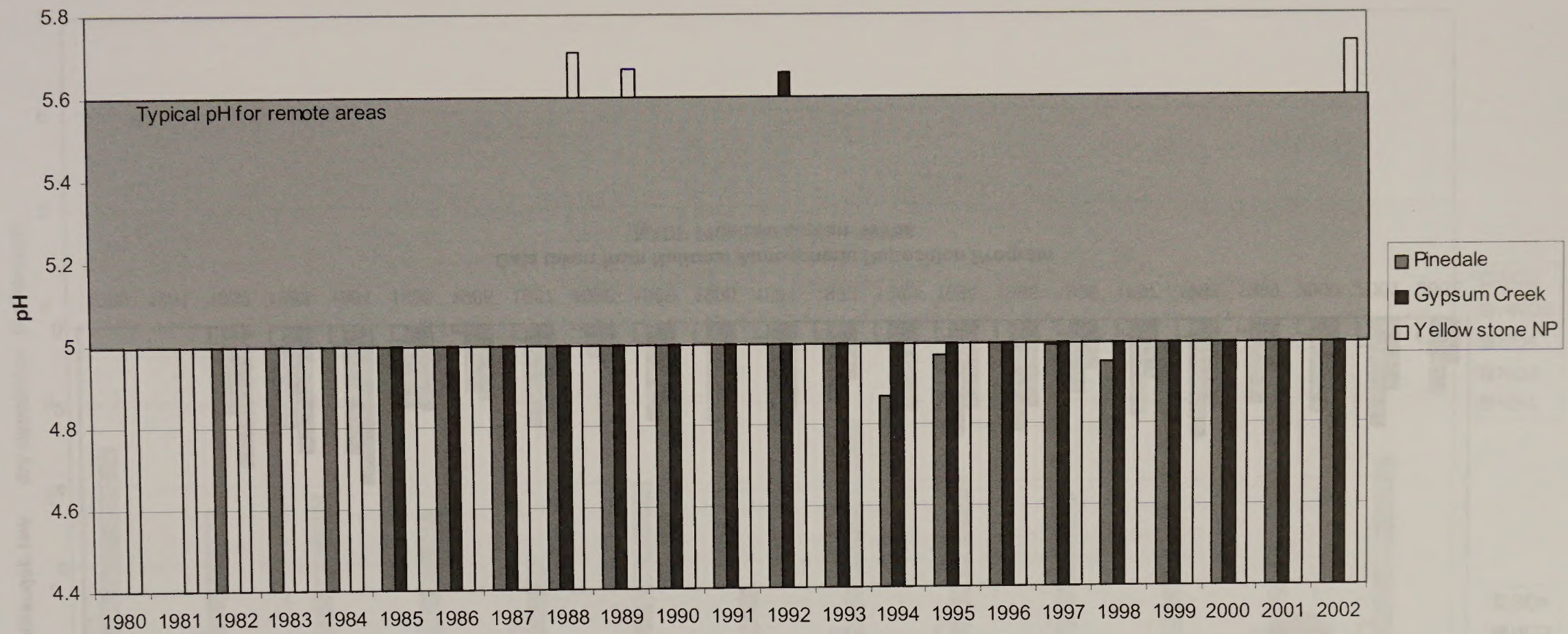
Data from Clean Air Status & Trends Network
CASTNet Pinedale station PND165
CASTNet Yellowstone station YELL408

Figure A15-4. Visibility in Bridger Wilderness



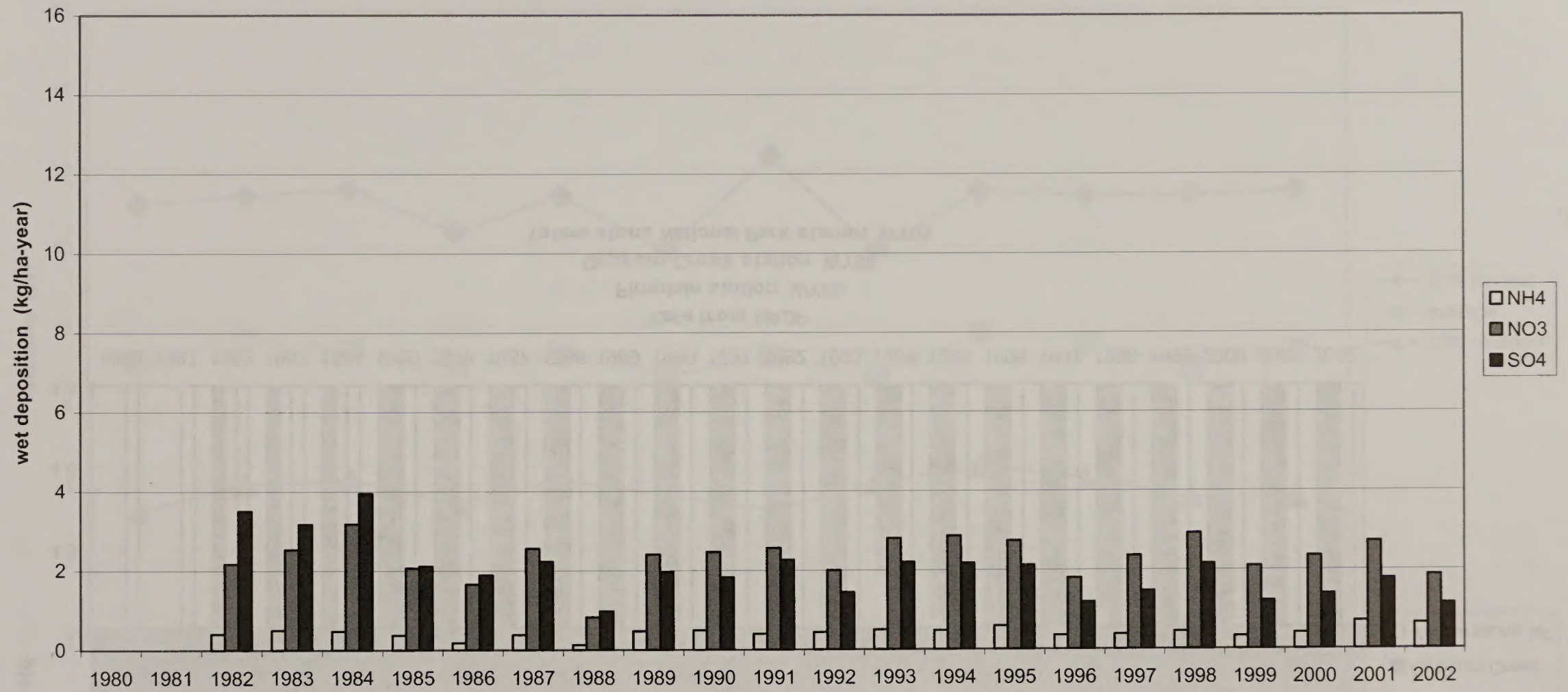
Data from Inter-Agency Monitoring of Protected Visual Environments
IMPROVE Bridger station BRID

Figure A15-5. Precipitation pH in Pinedale, Wyoming



Data from NADP
Pinedale station WY06
Gypsum Creek station WY98
Yellowstone National Park station WY08

Figure A15-6. Wet Deposition of Sulfur and Nitrogen Compounds in Pinedale, Wyoming



Data taken from National Atmospheric Deposition Program
NADP Pinedale station WY06

Figure A15-7. Mean Annual Dry Deposition of Sulfur and Nitrogen Compounds in Pinedale, Wyoming

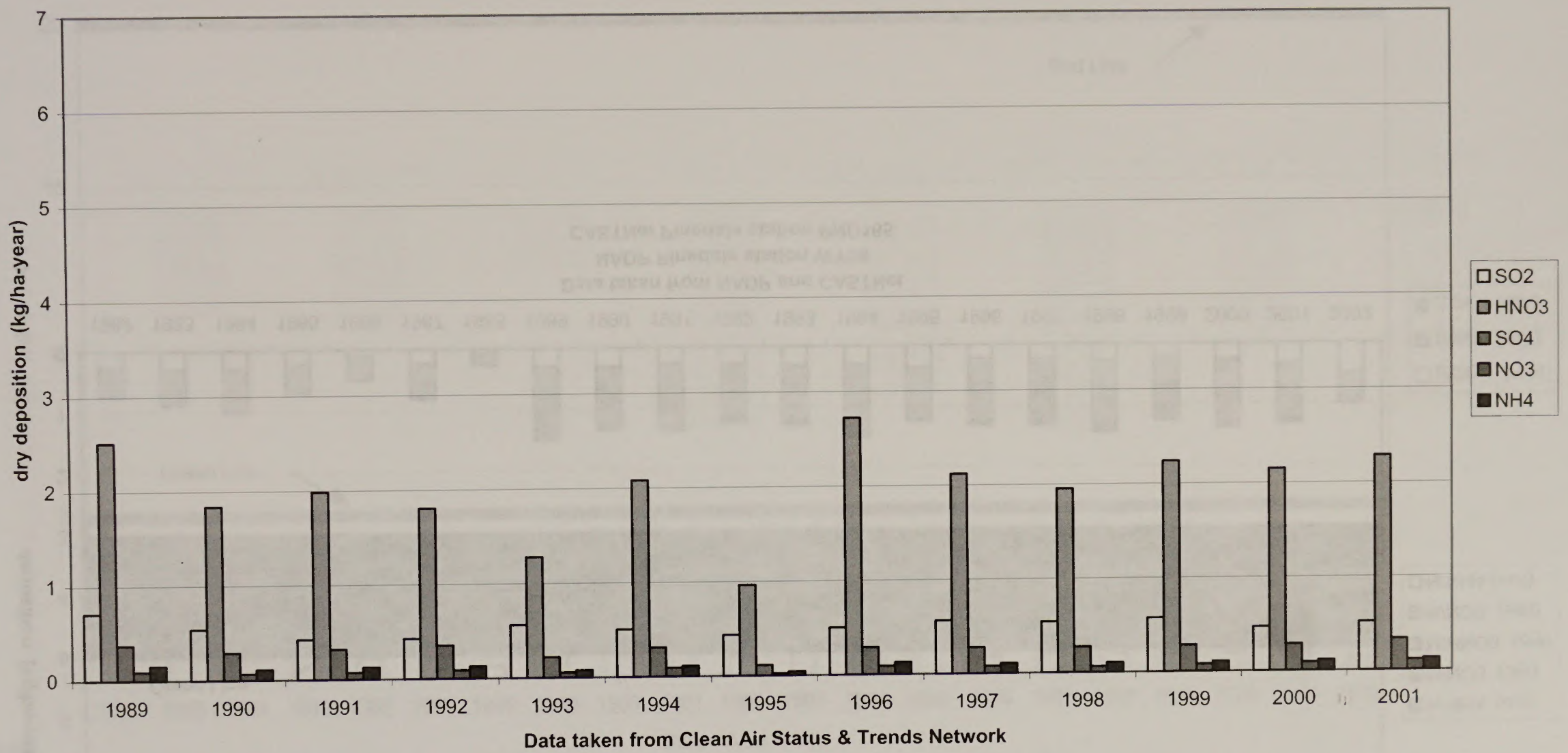
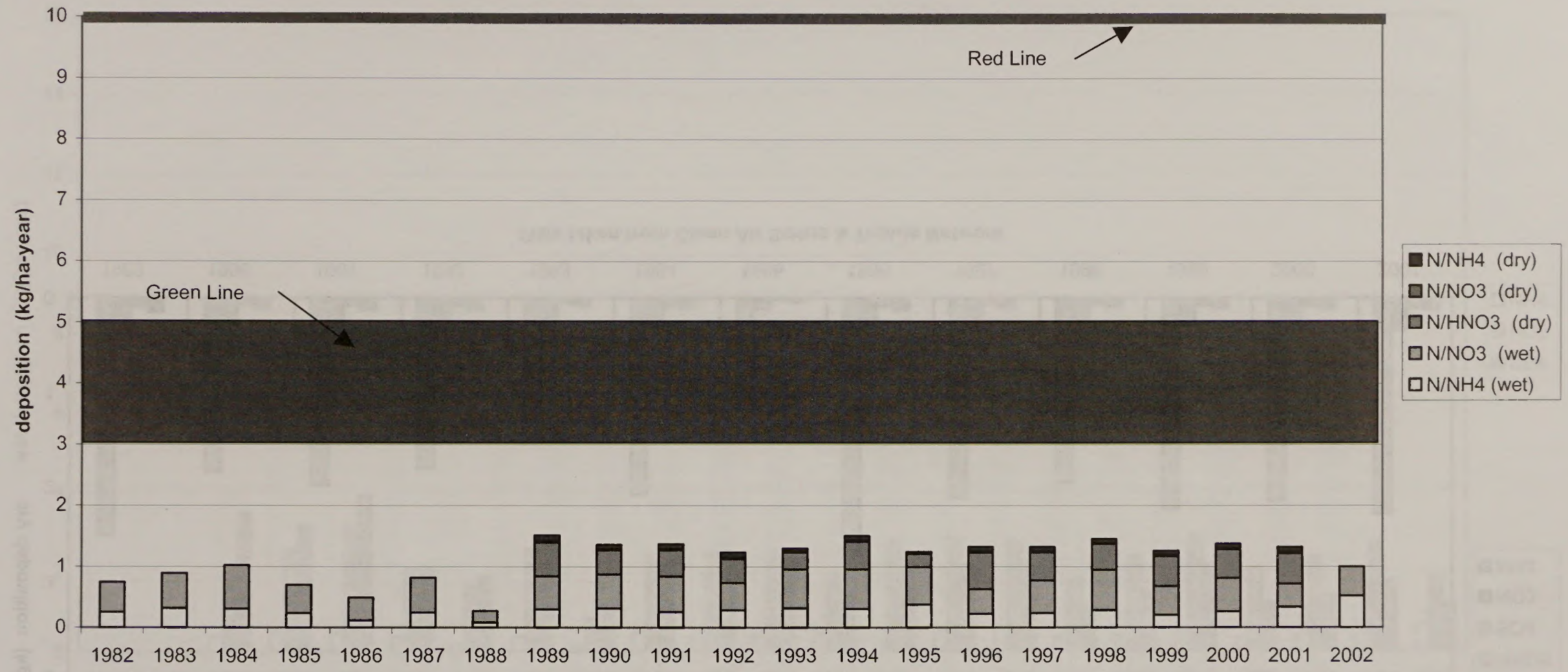


Figure A15-8. Total Nitrogen Deposition near Pinedale, Wyoming



Data taken from NADP and CASTNet
NADP Pinedale station WY06
CASTNet Pinedale station PND165

Figure A15-9. Total Sulfur Deposition near Pinedale, Wyoming

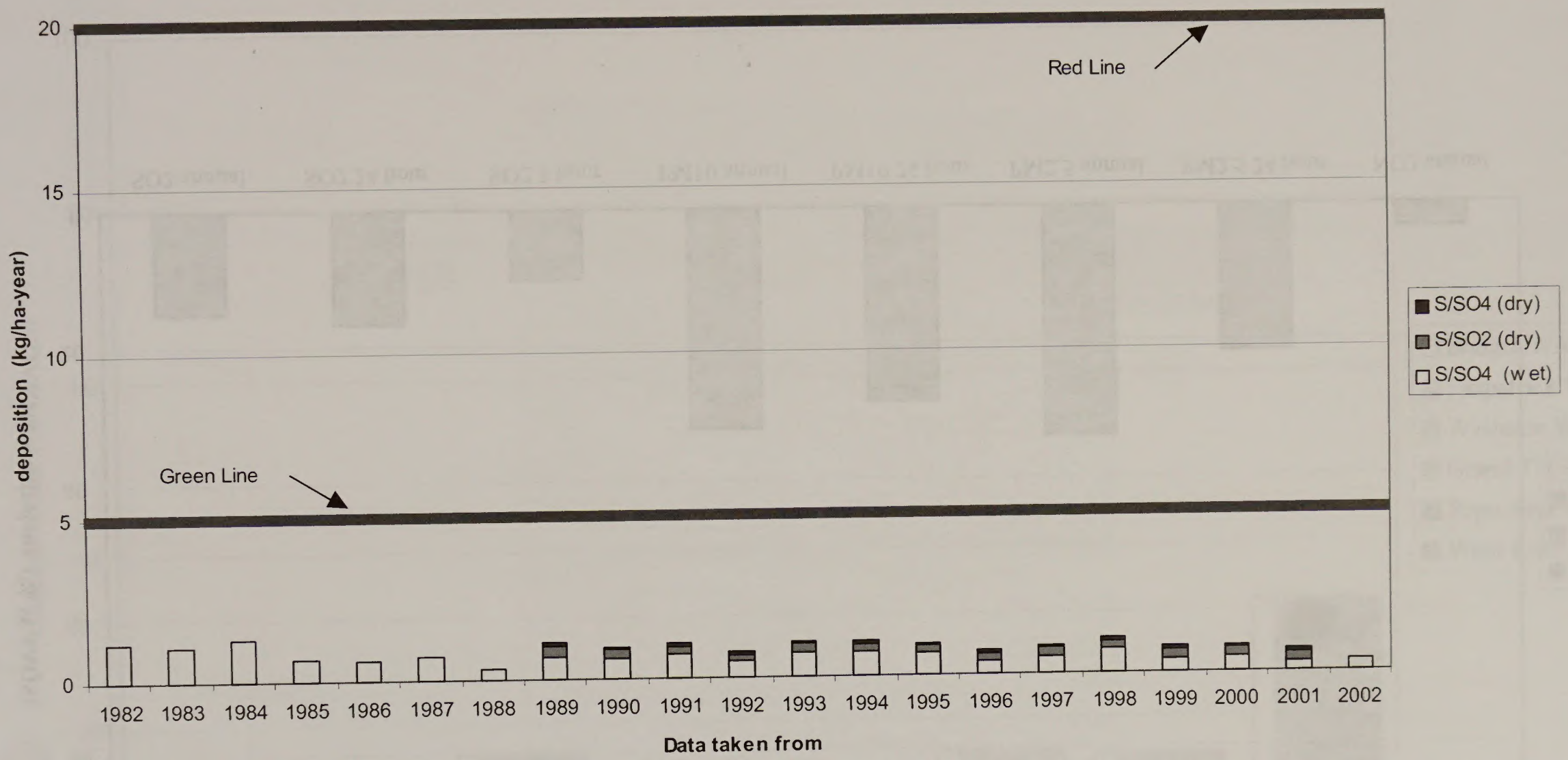


Figure A15-10. Potential Total Near-Field Concentrations near Jack Morrow Hills Area with respect to Wyoming Ambient Air Quality Standards

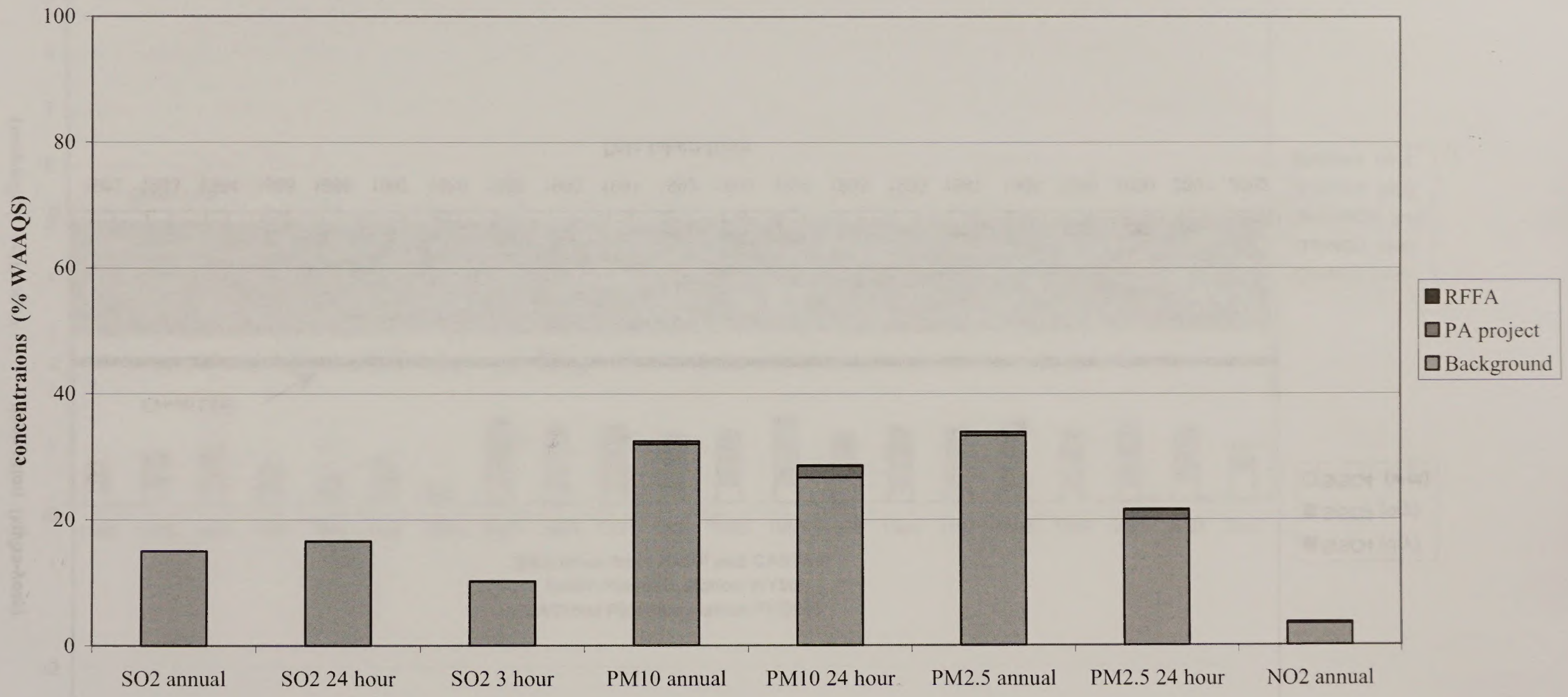


Figure A15-11. Far-Field Concentrations of Criteria Pollutants from the Pinedale Anticline Project

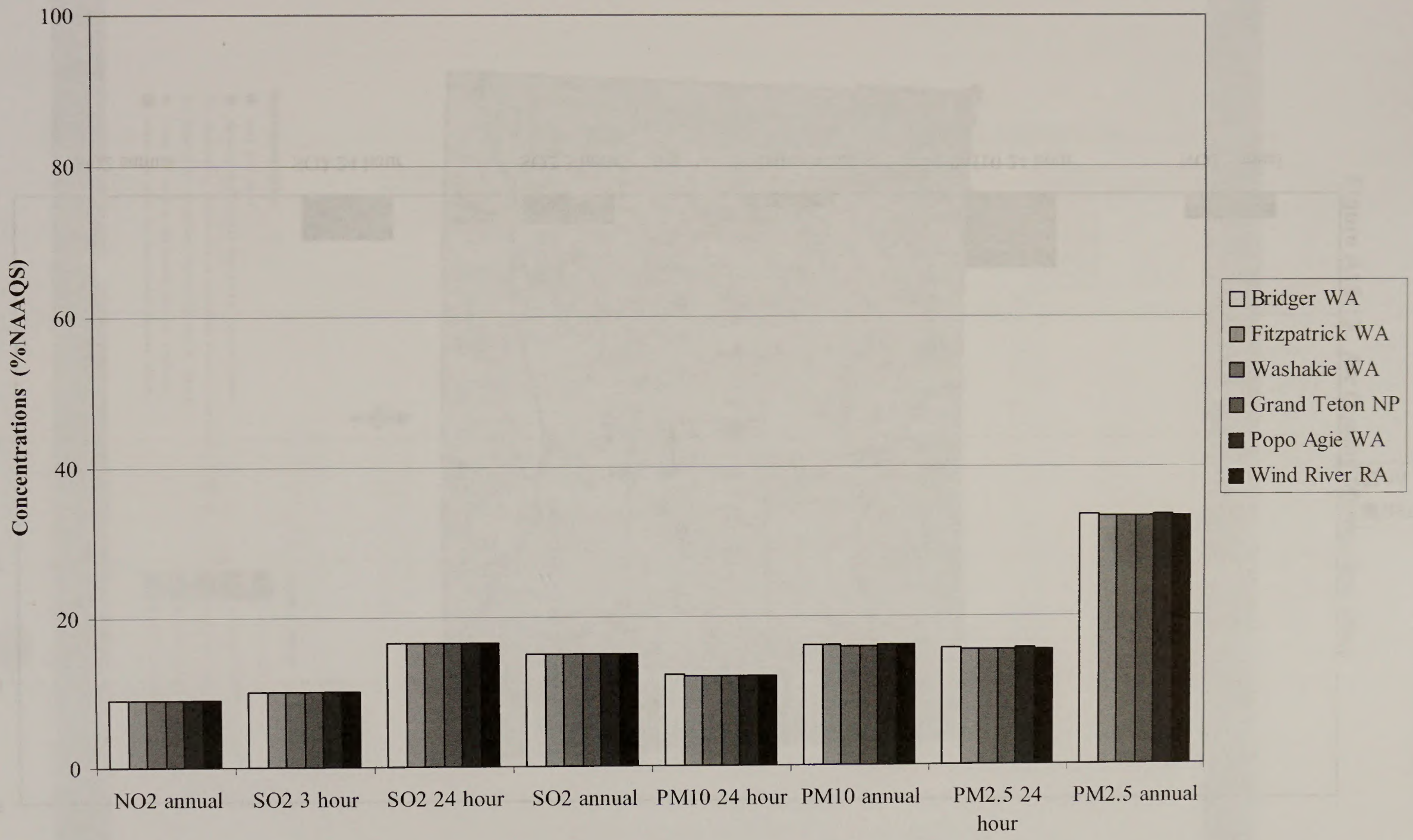


Figure A15-12. Potential Cumulative Far-Field Concentrations in Bridger Wilderness with respect to PSD Class I Increments

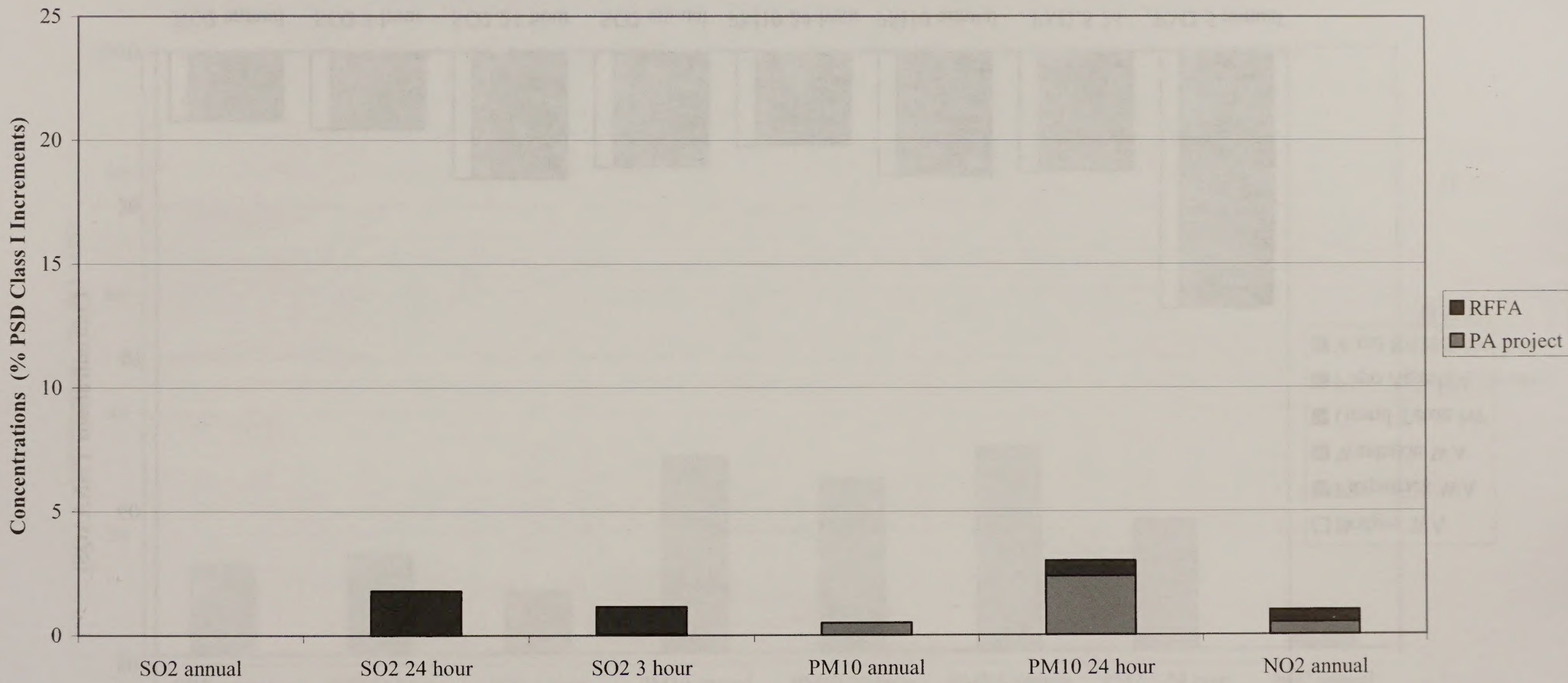


Figure A15-13. Air Quality Monitoring Sites

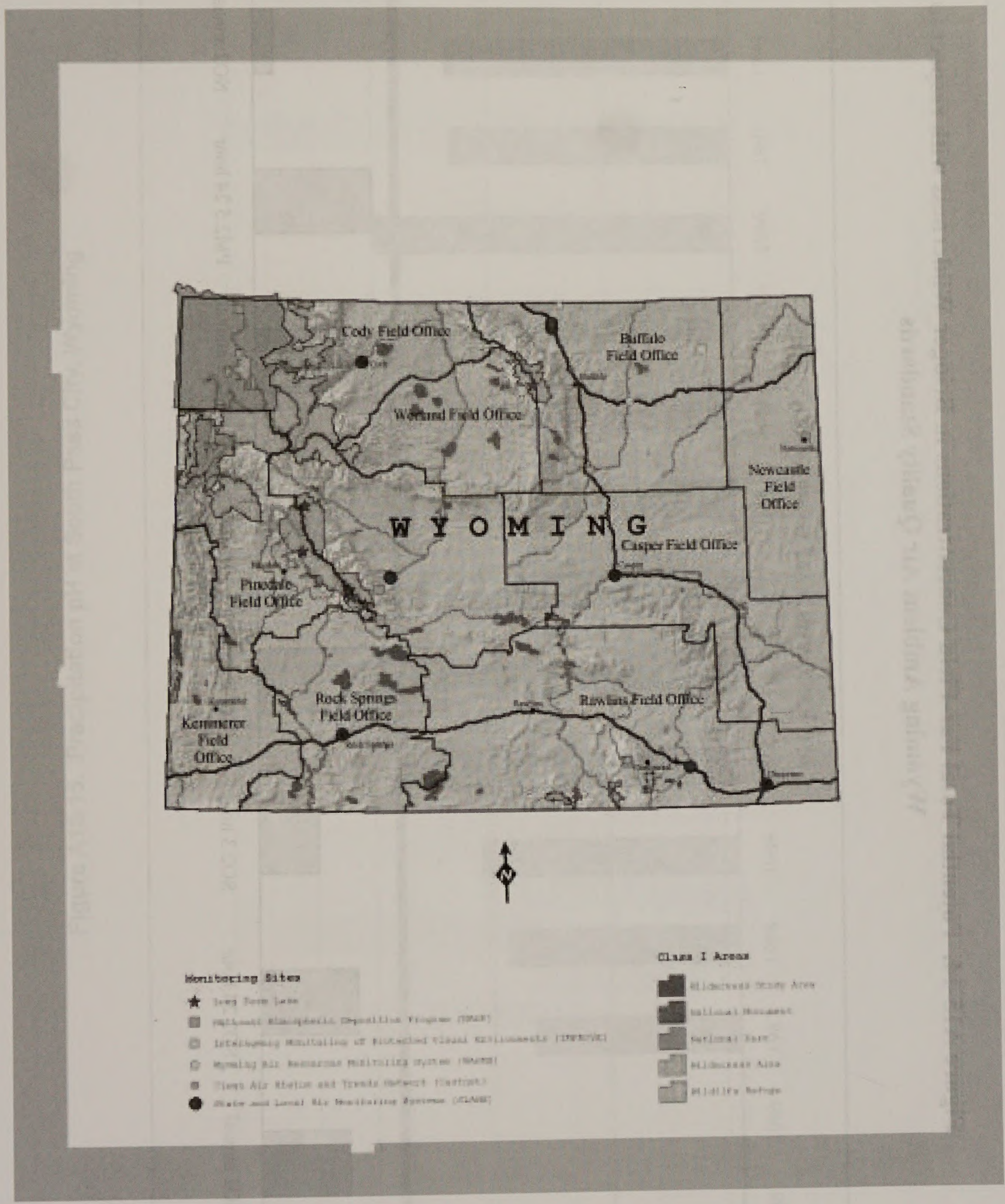


Figure A15-14. Potential Total Far-Field Concentrations in Bridger Wilderness with respect to Wyoming Ambient Air Quality Standards

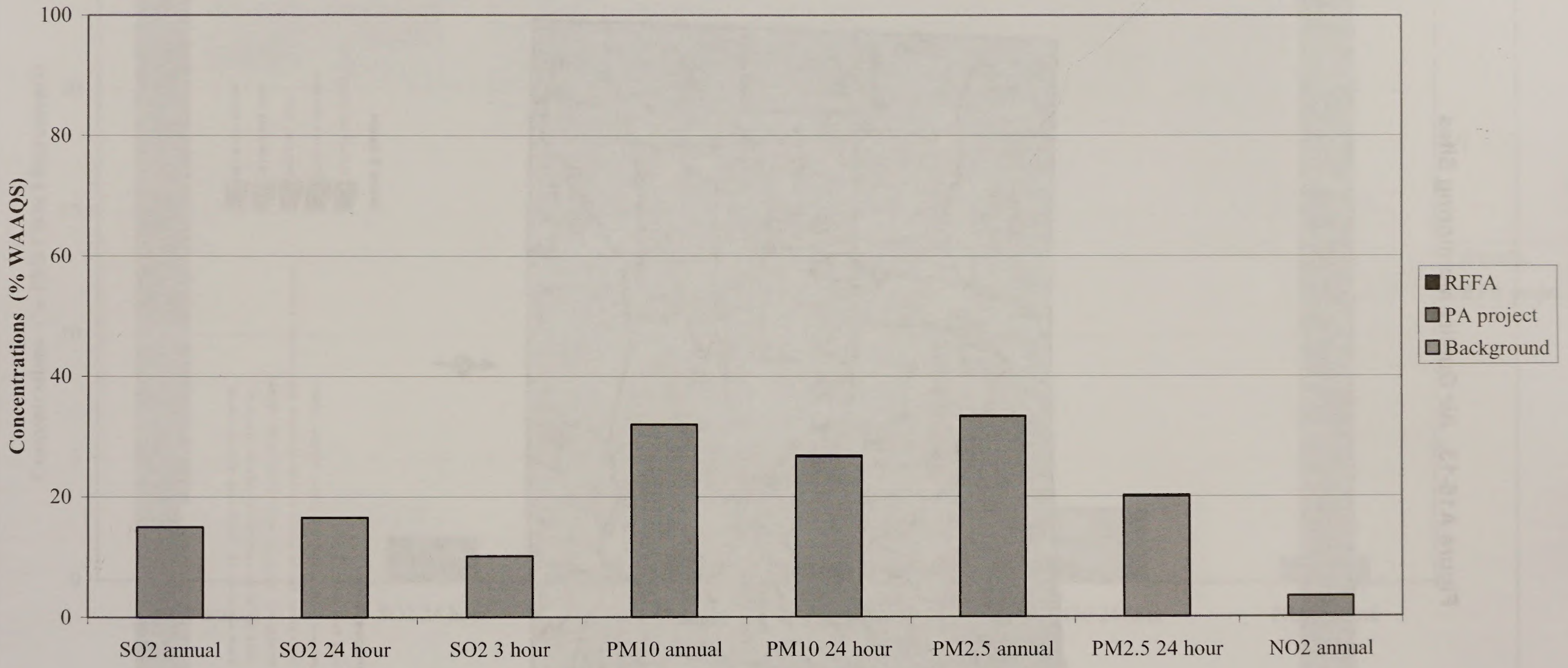
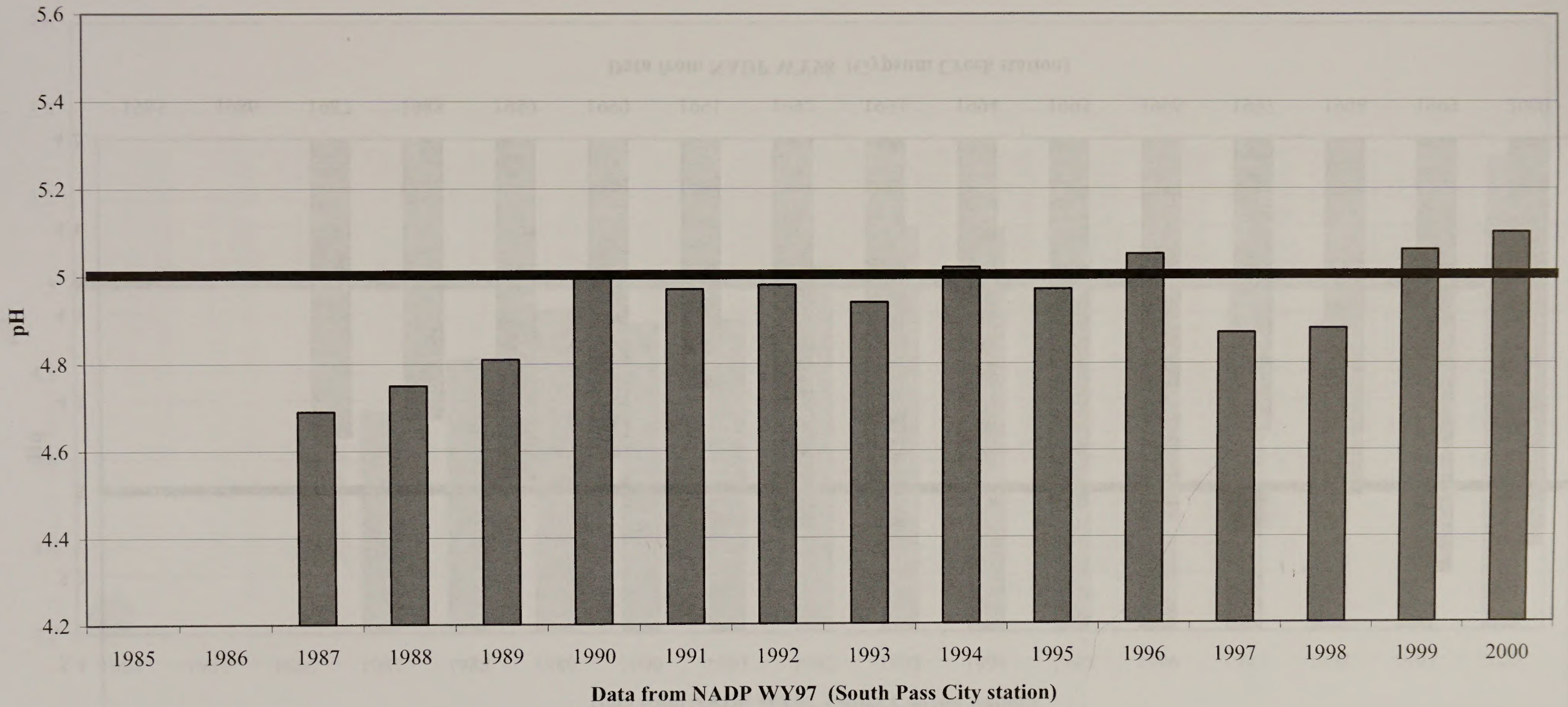
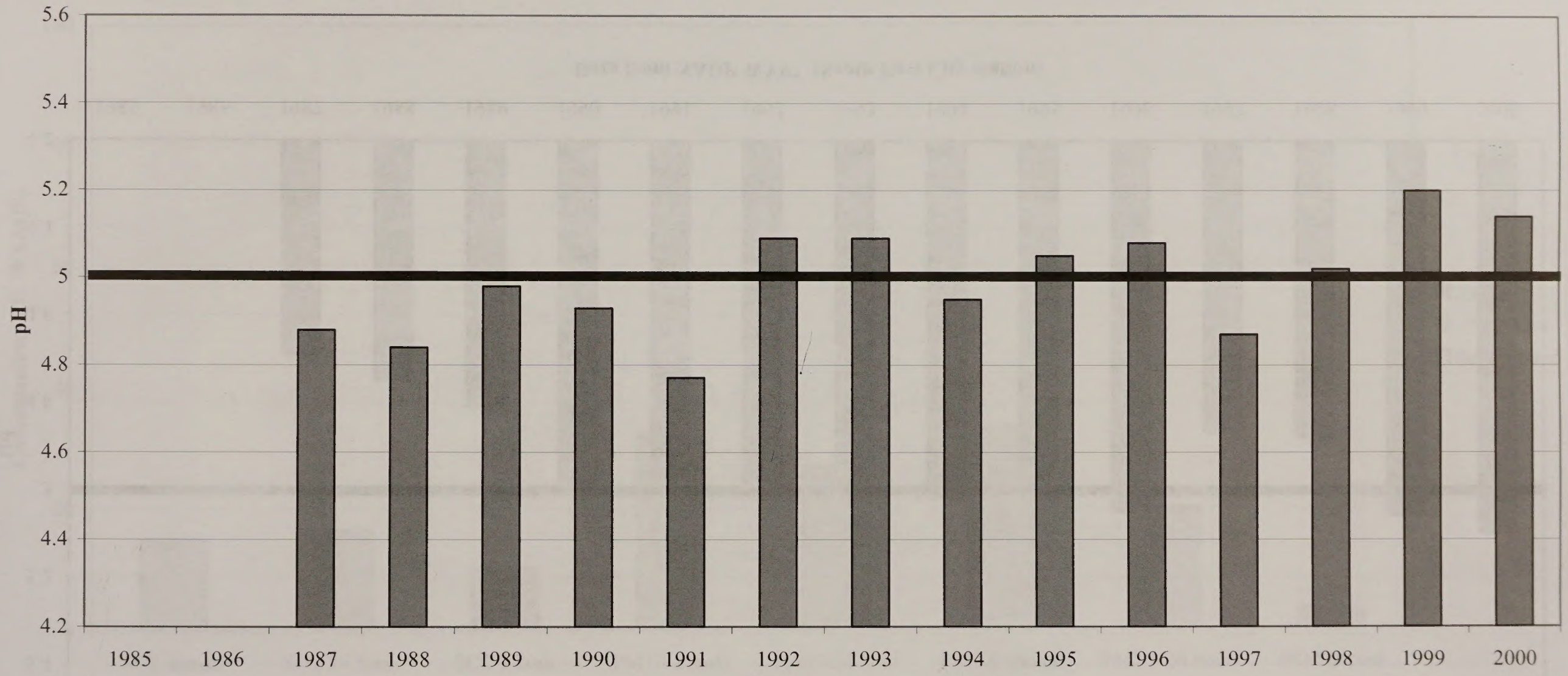


Figure A15-15. Precipitation pH at South Pass City, Wyoming



Data from NADP WY97 (South Pass City station)

Figure A15-16. Precipitation pH near Gypsum Creek, Wyoming



Data from NADP WY98 (Gypsum Creek station)

Figure A15-17. Precipitation pH near Sinks Canyon, Wyoming

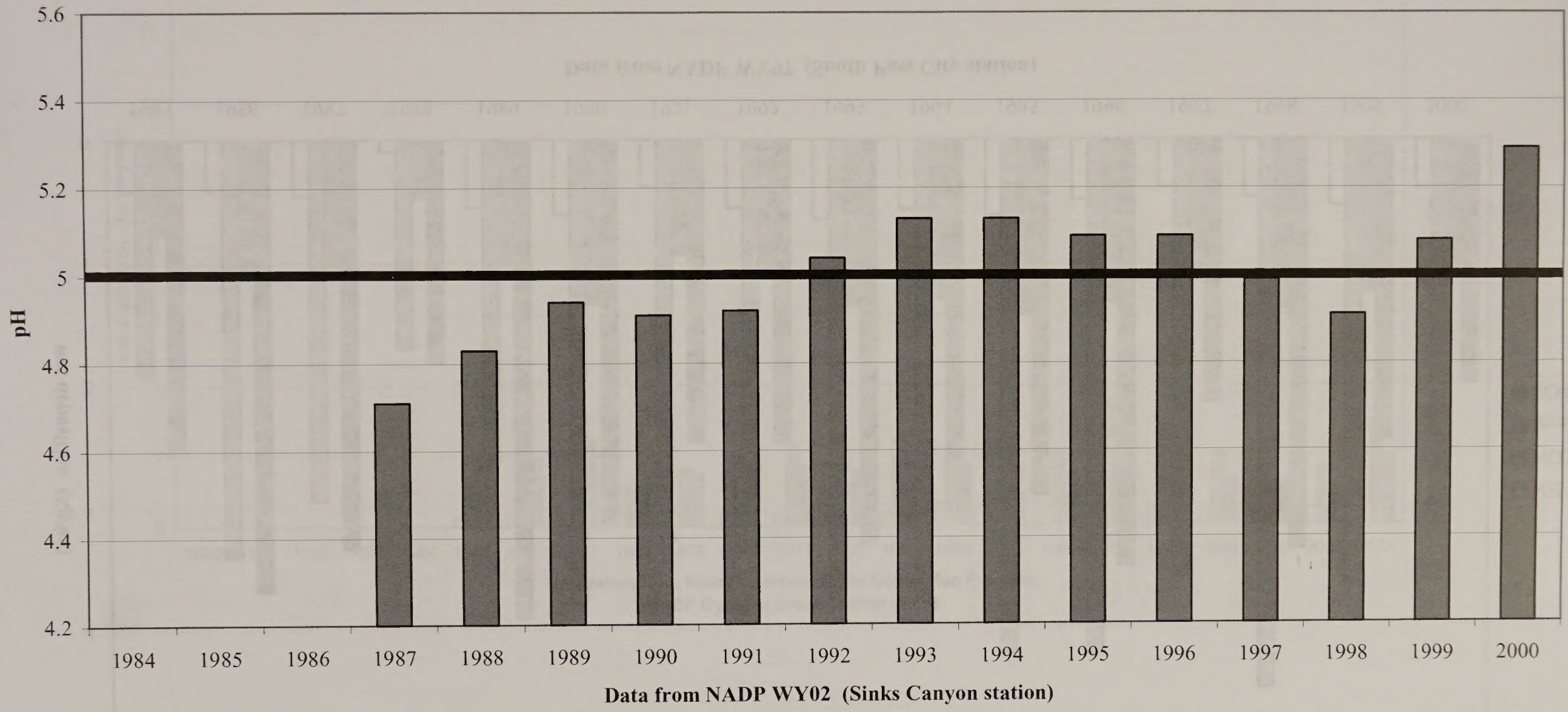


Figure A15-18. Wet Atmospheric Deposition near South Pass City, Wyoming

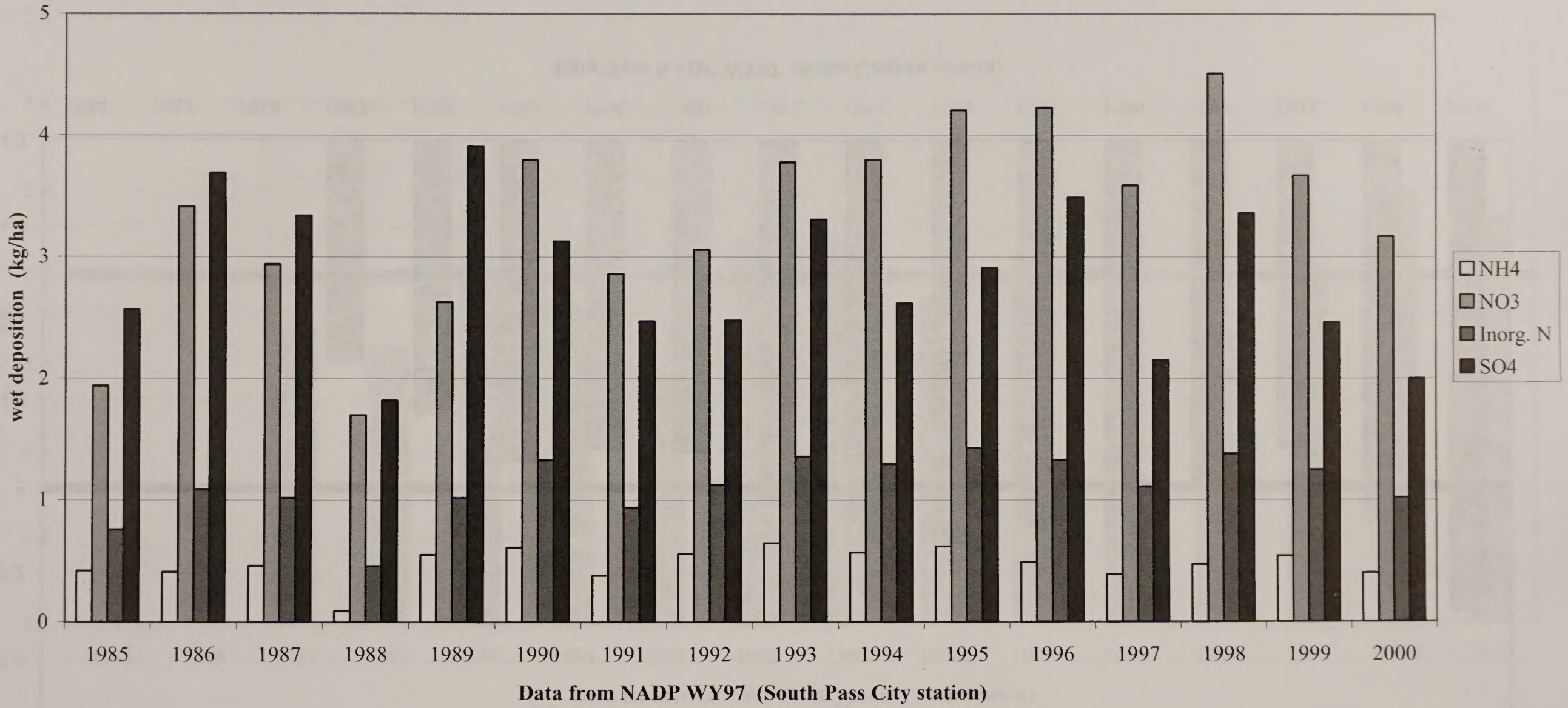
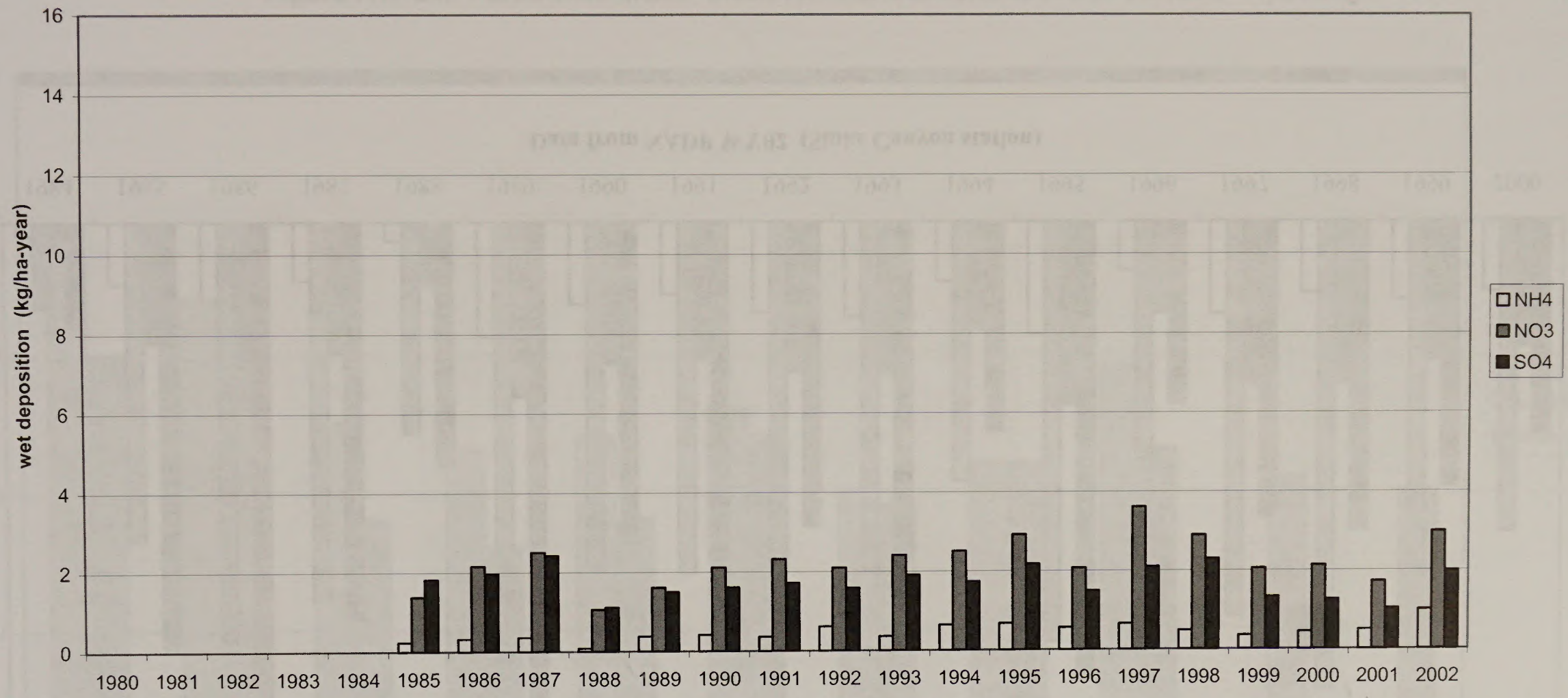
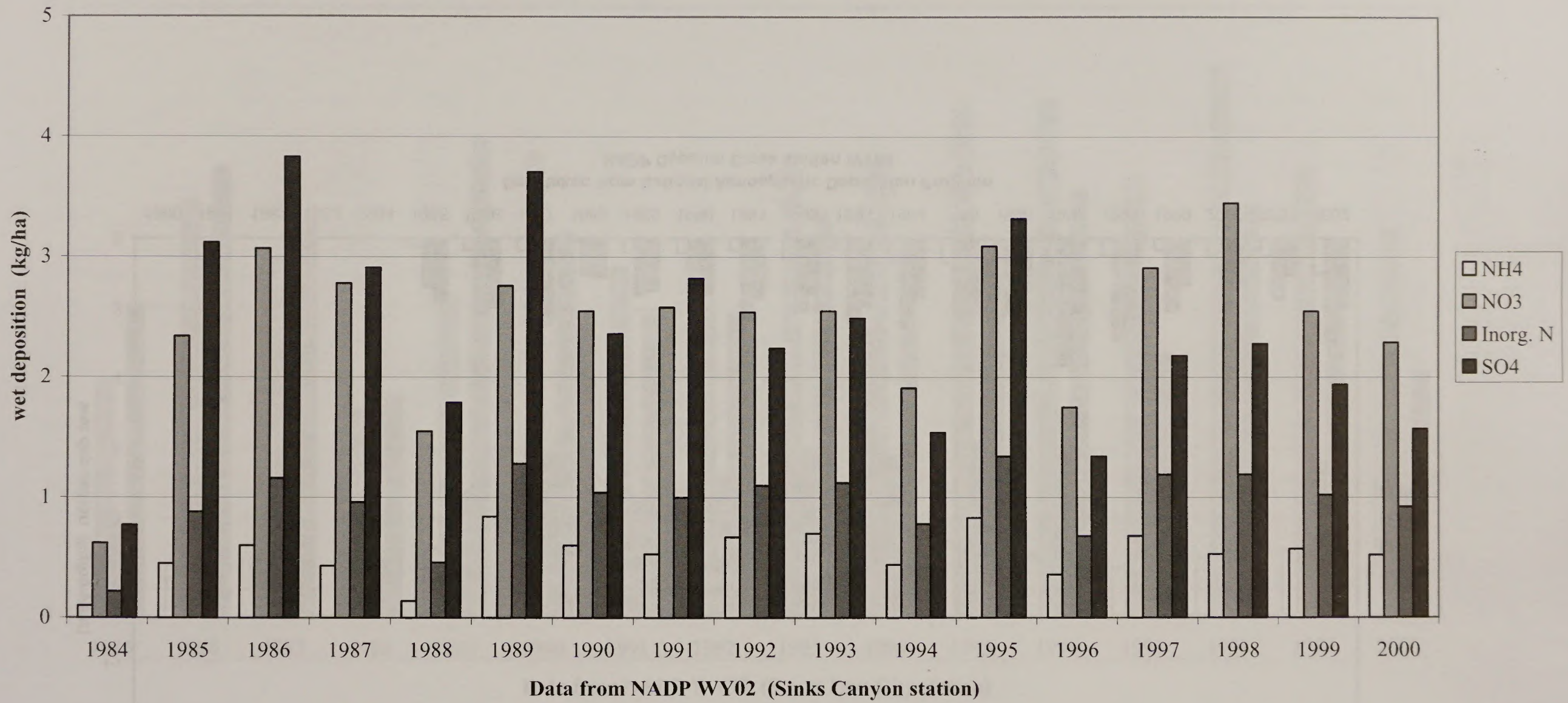


Figure A15-19. Wet Atmospheric Deposition near Gypsum Creek, Wyoming



Data taken from National Atmospheric Deposition Program
NADP Gypsum Creek station WY98

Figure A15-20. Wet Atmospheric Deposition near Sinks Canyon, Wyoming



Data from NADP WY02 (Sinks Canyon station)

Figure A15-21. Particulate Matter Mean Annual Concentrations in Lander, Wyoming

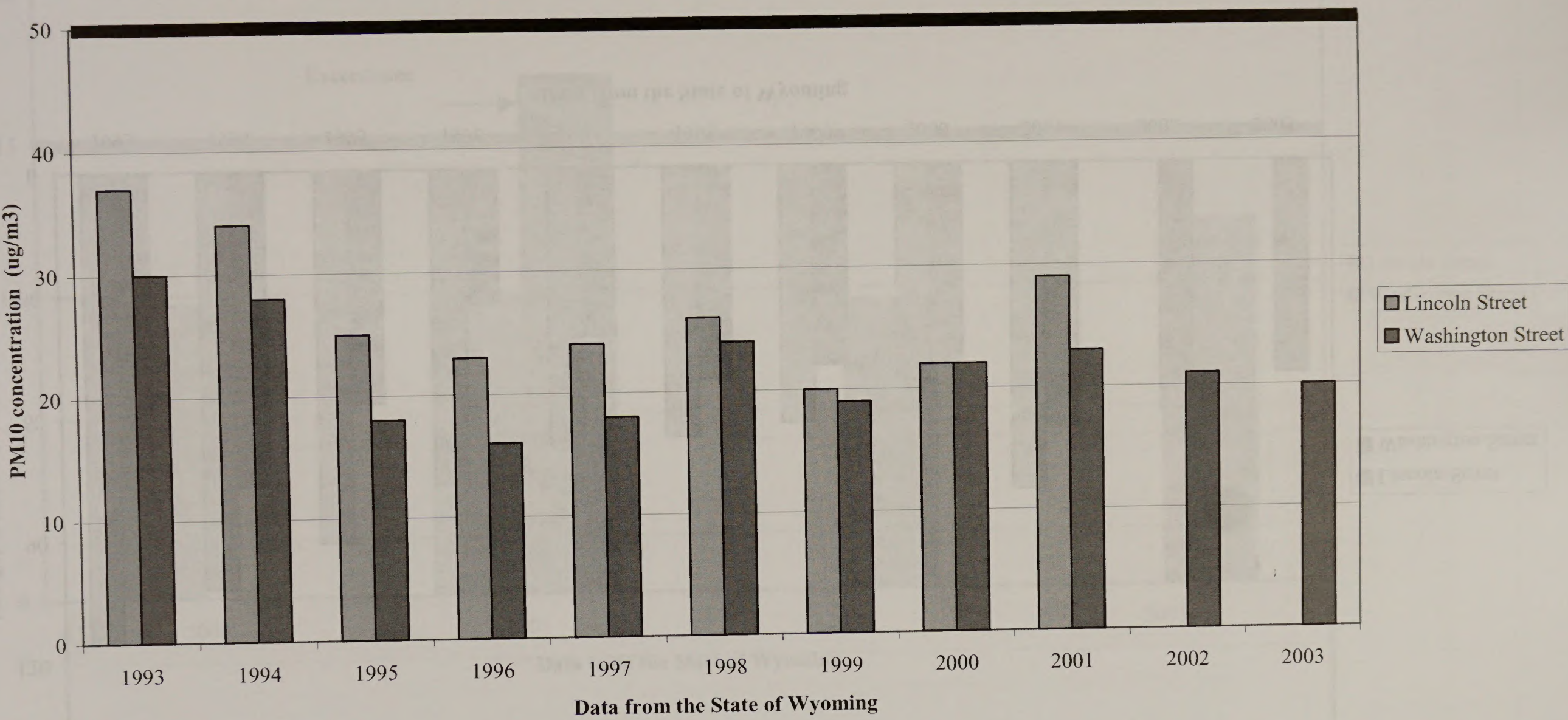


Figure A15-22. Particulate Matter 24-hour 99th Percentile Concentrations in Lander, Wyoming

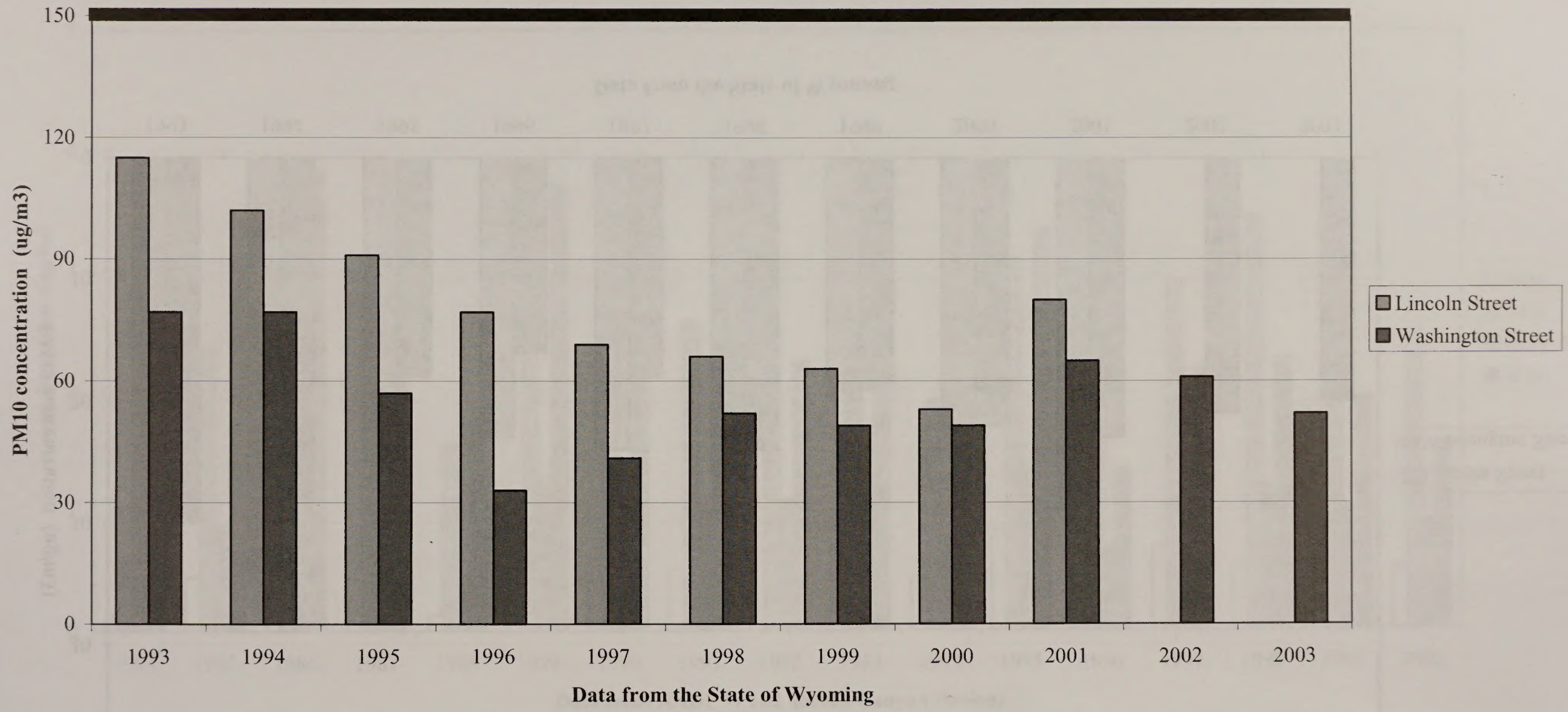


Figure A15-23. Particulate Matter Annual Mean Concentrations in Lander, Wyoming

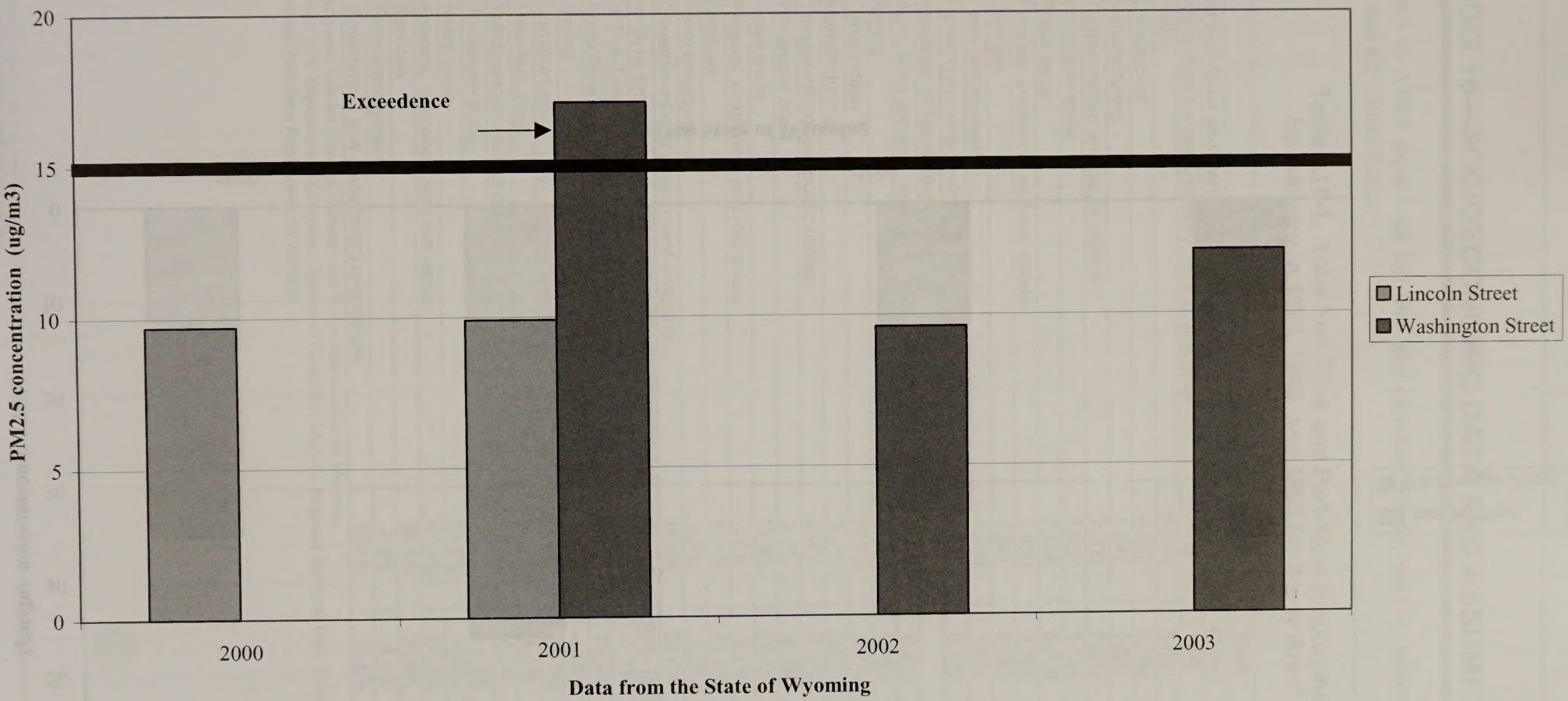
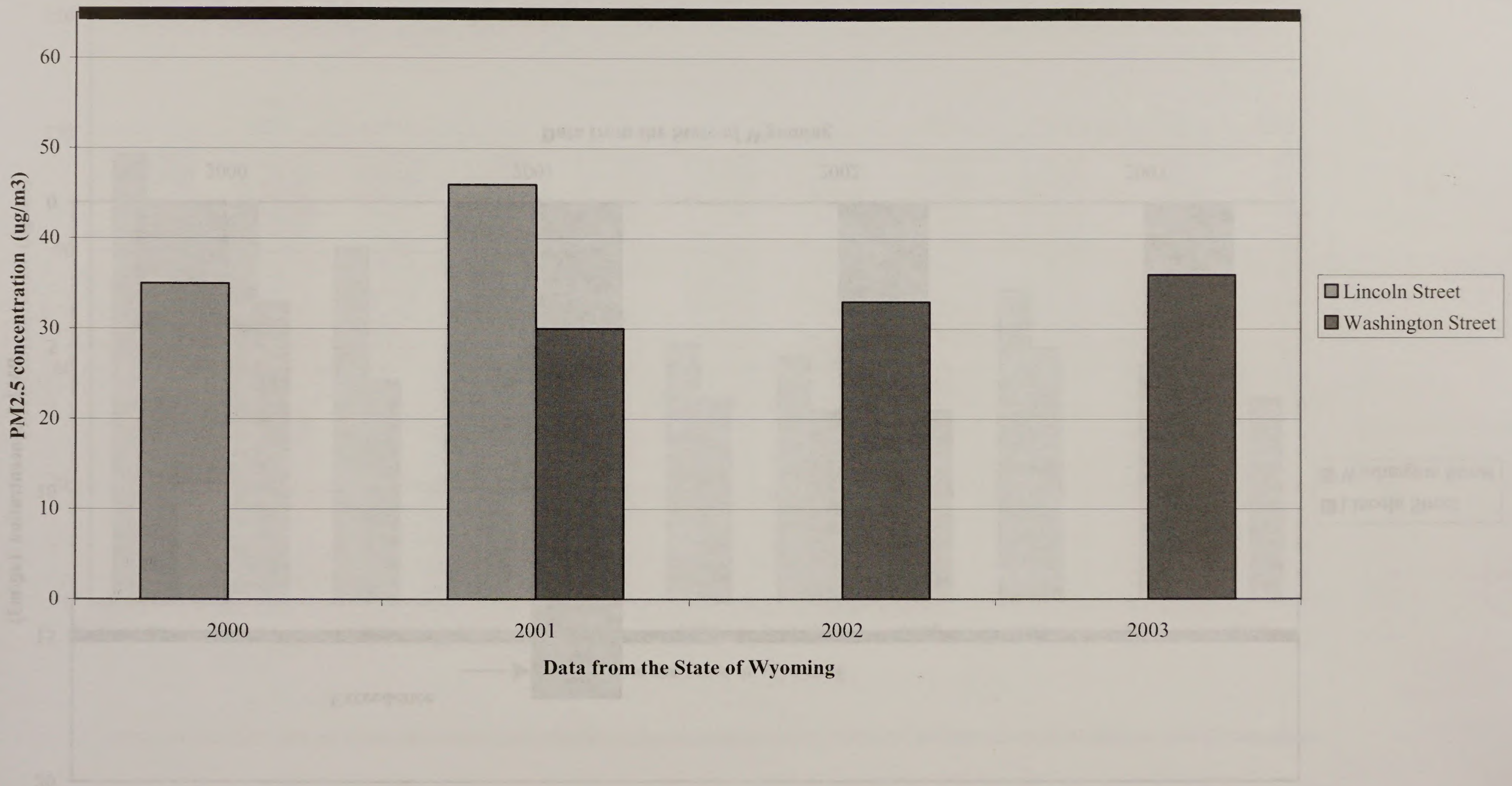


Figure A15-24. Fine Particulate Matter 24-hour 98 Percentile Concentrations in Lander, Wyoming



APPENDIX 16—SOCIOECONOMIC DATA AND ASSUMPTIONS

Tables A16-1 to A16-3 show total full-time and part-time employment by industry for the study area, Wyoming, and the United States.

Table A16-1. Total Full-Time and Part-Time Employment by Industry in 1979, 1989, and 1999 for Study Area[a]

	1979	1989	1999
Total Full-Time and Part-Time Employment	45,028	41,545	49,048
Agriculture services, forestry, fishing, and other	186	326	550
Mining	10,595	5,664	4,846
Construction	4,832	2,383	3,964
Manufacturing	1,247	1,322	2,428
Transportation and public utilities	2,903	2,903	2,820
Wholesale trade	1,067	1,184	1,068
Retail trade	7,156	6,809	8,915
Finance, insurance, and real estate	1,650	2,102	2,441
Services	7,241	8,795	11,573
Farm employment	1,836	1,732	1,704
Government and government enterprises	6,315	8,325	8,739
Percentage of Total Employment			
Agriculture services, forestry, fishing, and other	0.4%	0.8%	1.1%
Mining	23.5%	13.6%	9.9%
Construction	10.7%	5.7%	8.1%
Manufacturing	2.8%	3.2%	5.0%
Transportation and public utilities	6.4%	7.0%	5.7%
Wholesale trade	2.4%	2.8%	2.2%
Retail trade	15.9%	16.4%	18.2%
Finance, insurance, and real estate	3.7%	5.1%	5.0%
Services	16.1%	21.2%	23.6%
Farm employment	4.1%	4.2%	3.5%
Government and government enterprises	14.0%	20.0%	17.8%
Growth in Employment by Sector	**1979–1999**	**1979–1989**	**1989–1999**
Total Full-Time and Part-Time Employment	8.9%	-7.7%	18.1%
Agriculture services, forestry, fishing, and other	195.7%	75.3%	68.7%
Mining	-54.3%	-46.5%	-14.4%
Construction	-18.0%	-50.7%	66.3%
Manufacturing	94.7%	6.0%	83.7%
Transportation and public utilities	-2.9%	0.0%	-2.9%
Wholesale trade	0.1%	11.0%	-9.8%
Retail trade	24.6%	-4.8%	30.9%
Finance, insurance, and real estate	47.9%	27.4%	16.1%
Services	59.8%	21.5%	31.6%
Farm employment	-7.2%	-5.7%	-1.6%
Government and government enterprises	38.4%	31.8%	5.0%

[a] Study area includes Fremont, Sublette, and Sweetwater counties in Wyoming.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table SA25, Total Full-Time and Part-Time Employment by Industry.

Table A16-2. Total Full-Time and Part-Time Employment by Industry in 1979, 1989, and 1999 for Wyoming

	1979	1989	1999
Total Full-Time and Part-Time Employment	266,605	267,048	321,592
Agriculture services, forestry, fishing, and other	1,998	3,154	4,719
Mining	34,622	20,111	17,811
Construction	26,059	15,124	23,909
Manufacturing	10,780	10,449	13,435
Transportation and public utilities	17,895	16,560	17,061
Wholesale trade	9,126	8,017	8,585
Retail trade	42,933	45,609	57,487
Finance, insurance, and real estate	15,615	17,532	21,966
Services	45,462	59,554	82,327
Farm employment	14,526	12,455	12,168
Government employment	47,589	58,483	62,124
Percentage of Total Employment			
Agriculture services, forestry, fishing, and other	0.7%	1.2%	1.5%
Mining	13.0%	7.5%	5.5%
Construction	9.8%	5.7%	7.4%
Manufacturing	4.0%	3.9%	4.2%
Transportation and public utilities	6.7%	6.2%	5.3%
Wholesale trade	3.4%	3.0%	2.7%
Retail trade	16.1%	17.1%	17.9%
Finance, insurance, and real estate	5.9%	6.6%	6.8%
Services	17.1%	22.3%	25.6%
Farm employment	5.4%	4.7%	3.8%
Government employment	17.9%	21.9%	19.3%
Growth in Employment by Sector	**1979–1999**	**1979–1989**	**1989–1999**
Total full-time and part-time employment	20.6%	0.2%	20.4%
Agriculture services, forestry, fishing, and other	136.2%	57.9%	49.6%
Mining	-48.6%	-41.9%	-11.4%
Construction	-8.3%	-42.0%	58.1%
Manufacturing	24.6%	-3.1%	28.6%
Transportation and public utilities	-4.7%	-7.5%	3.0%
Wholesale trade	-5.9%	-12.2%	7.1%
Retail trade	33.9%	6.2%	26.0%
Finance, insurance, and real estate	40.7%	12.3%	25.3%
Services	81.1%	31.0%	38.2%
Farm employment	30.5%	22.9%	6.2%
Government employment	-16.2%	-14.3%	-2.3%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table SA25, Total Full-Time and Part-Time Employment by Industry.

Table A16-3. Total Full-Time and Private Employment by Industry In 1979, 1989, 1999 for United States

	1979	1989	1999
Total Full-Time and Part-Time Employment	113,289,100	137,240,800	163,757,900
Agriculture services, forestry, fishing, and other	868,500	1,374,300	2,048,400
Mining	1,154,200	1,047,700	782,100
Construction	5,906,200	7,293,500	9,254,000
Manufacturing	21,498,000	19,992,500	19,252,700
Transportation and public utilities	5,627,400	6,361,600	7,970,300
Wholesale trade	5,672,600	6,704,300	7,464,700
Retail trade	17,780,500	22,687,600	26,910,000
Finance, insurance, and real estate	8,538,100	10,663,400	12,978,700
Services	24,082,600	37,170,900	51,669,000
Farm employment	3,764,000	3,200,000	3,172,000
Government employment	18,397,000	20,745,000	22,256,000
Percentage of Total Employment			
Agriculture services, forestry, fishing, and other	0.8%	1.0%	1.3%
Mining	1.0%	0.8%	0.5%
Construction	5.2%	5.3%	5.7%
Manufacturing	19.0%	14.6%	11.8%
Transportation and public utilities	5.0%	4.6%	4.9%
Wholesale trade	5.0%	4.9%	4.6%
Retail trade	15.7%	16.5%	16.4%
Finance, insurance, and real estate	7.5%	7.8%	7.9%
Services	21.3%	27.1%	31.6%
Farm employment	3.3%	2.3%	1.9%
Government employment	16.2%	15.1%	13.6%
Growth in Private Employment by Sector	**1979–1999**	**1979–1989**	**1989–1999**
Total full-time and part-time employment	44.5%	21.1%	19.3%
Agriculture services, forestry, fishing, and other	135.9%	58.2%	49.1%
Mining	-32.2%	-9.2%	-25.4%
Construction	56.7%	23.5%	26.9%
Manufacturing	-10.4%	-7.0%	-3.7%
Transportation and public utilities	41.6%	13.0%	25.3%
Wholesale trade	31.6%	18.2%	11.3%
Retail trade	51.3%	27.6%	18.6%
Finance, insurance, and real estate	52.0%	24.9%	21.7%
Services	114.5%	54.3%	39.0%
Farm employment	51.8%	24.3%	22.1%
Government employment	-15.7%	-15.0%	-0.9%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table SA25, Total Full-Time and Part-Time Employment by Industry.

Tables A16-4 to A16-6 summarize gross earnings for 1979, 1989, and 1999 for the study area, Wyoming, and the United States.

Table A16-4. Gross Labor Earnings by Industry in 1979, 1989, and 1999 for Study Area[a]

	1979	1989	1999
Total Gross Labor Earnings (1,000$)	$1,720,553	$1,538,039	$2,003,395
Agriculture services, forestry, fishing, and other	$2,961	$3,118	$4,620
Mining	$574,033	$373,733	$332,537
Construction	$221,865	$76,802	$119,073
Manufacturing	$47,485	$35,992	$110,045
Transportation and public utilities	$129,570	$130,544	$130,625
Wholesale trade	$36,912	$38,183	$30,157
Retail trade	$137,389	$96,852	$134,252
Finance, insurance, and real estate	$27,745	$26,217	$45,425
Services	$174,983	$160,430	$229,860
Farm earnings	$21,919	$7,914	$16,422
Federal, state, and local government	$178,387	$245,280	$274,346
Percentage of Total Gross Earnings			
Agriculture services, forestry, fishing, and other	0.2%	0.2%	0.2%
Mining	33.4%	24.3%	16.6%
Construction	12.9%	5.0%	5.9%
Manufacturing	2.8%	2.3%	5.5%
Transportation and public utilities	7.5%	8.5%	6.5%
Wholesale trade	2.1%	2.5%	1.5%
Retail trade	8.0%	6.3%	6.7%
Finance, insurance, and real estate	1.6%	1.7%	2.3%
Services	10.2%	10.4%	11.5%
Farm earnings	1.3%	0.5%	0.8%
Federal, state, and local government	10.4%	15.9%	13.7%
Growth in Gross Labor Earnings	**1979–1999**	**1979–1989**	**1989–1999**
Total gross labor earnings	16%	-10.6%	30.3%
Agriculture services, forestry, fishing, and other	56%	5.3%	48.2%
Mining	-42%	-34.9%	-11.0%
Construction	-46%	-65.4%	55.0%
Manufacturing	132%	-24.2%	205.7%
Transportation and public utilities	1%	0.8%	0.1%
Wholesale trade	-18%	3.4%	-21.0%
Retail trade	-2%	-29.5%	38.6%
Finance, insurance, and real estate	64%	-5.5%	73.3%
Services	31%	-8.3%	43.3%
Farm earnings	-25%	-63.9%	107.5%
Federal, state, and local government	54%	37.5%	11.9%

a Study area includes Fremont, Sublette, and Sweetwater counties in Wyoming.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Table CA05, Personal Income by Major Source and Earnings by Industry, 1979–1999.

Table A16-5. Gross Labor Earnings by Industry in 1979, 1989, 1999 for Wyoming

Gross Labor Earnings by Industry	Real Dollars (2001$)		
	1979	1989	1999
Total Gross Labor Earnings (1,000$)	$8,329,148	$6,971,189	$8,731,046
Agriculture services, forestry, fishing, and other	$31,981	$44,876	$69,286
Mining	$1,924,385	$1,231,393	$1,198,771
Construction	$1,059,820	$469,295	$739,548
Manufacturing	$443,244	$319,859	$454,122
Transportation and public utilities	$812,461	$706,161	$778,282
Wholesale trade	$334,734	$255,654	$287,143
Retail trade	$816,368	$639,216	$844,364
Finance, insurance, and real estate	$263,545	$241,652	$449,663
Services	$1,019,721	$1,085,319	$1,681,233
Farm earnings	$211,230	$106,176	$149,514
Federal, state, and local government	$1,411,658	$1,871,589	$2,079,120
Percentage of Total Gross Earnings	**1979**	**1989**	**1999**
Agriculture services, forestry, fishing, and other	0.4%	0.6%	0.8%
Mining	23.1%	17.7%	13.7%
Construction	12.7%	6.7%	8.5%
Manufacturing	5.3%	4.6%	5.2%
Transportation and public utilities	9.8%	10.1%	8.9%
Wholesale trade	4.0%	3.7%	3.3%
Retail trade	9.8%	9.2%	9.7%
Finance, insurance, and real estate	3.2%	3.5%	5.2%
Services	12.2%	15.6%	19.3%
Farm earnings	2.5%	1.5%	1.7%
Federal, state, and local government	16.9%	26.8%	23.8%
Growth in Gross Labor Earnings	**1979–1999**	**1979–1989**	**1989–1999**
Total Gross Labor Earnings	4.8%	-16.3%	25.2%
Agriculture services, forestry, fishing, and other	-37.7%	-36.0%	-2.6%
Mining	-30.2%	-55.7%	57.6%
Construction	2.5%	-27.8%	42.0%
Manufacturing	-4.2%	-13.1%	10.2%
Transportation and public utilities	-14.2%	-23.6%	12.3%
Wholesale trade	3.4%	-21.7%	32.1%
Retail trade	70.6%	-8.3%	86.1%
Finance, insurance, and real estate	64.9%	6.4%	54.9%
Services	-29.2%	-49.7%	40.8%
Farm earnings	47.3%	32.6%	11.1%
Federal, state, and local government	1.0%	0.5%	0.5%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Table CA05, Personal Income by Major Source and Earnings by Industry, 1979–1999.

Table A16-6. Gross Labor Earnings by Industry in 1979, 1989, and 1999 for United States

Gross Labor Earnings by Industry	Real Dollars (2001$)		
	1979	1989	1999
Total Gross Labor Earnings (1,000$)	$2,473,711,917	$3,213,383,025	$4,498,593,061
Agriculture services, forestry, fishing, and other	$11,571,539	$19,448,185	$32,032,777
Mining	$5,287,312	$2,850,445	$2,462,143
Construction	$54,560,355	$61,805,723	$73,127,276
Manufacturing	$487,005,399	$486,935,561	$543,740,656
Transportation and public utilities	$25,406,865	$14,937,485	$13,479,969
Wholesale trade	$306,783,648	$372,747,055	$482,546,483
Retail trade	$18,470,883	$21,332,051	$28,449,300
Finance, insurance, and real estate	$56,380,640	$87,843,232	$126,468,277
Services	$22,219,437	$31,870,642	$47,090,282
Farm earnings	$59,676,051	$52,125,511	$42,903,968
Federal, state, and local government	$133,987,659	$153,653,522	$171,826,720
Percentage of Total Gross Earnings	**1979**	**1989**	**1999**
Agriculture services, forestry, fishing, and other	0.5%	0.6%	0.7%
Mining	0.2%	0.1%	0.1%
Construction	2.2%	1.9%	1.6%
Manufacturing	19.7%	15.2%	12.1%
Transportation and public utilities	1.0%	0.5%	0.3%
Wholesale trade	12.4%	11.6%	10.7%
Retail trade	0.7%	0.7%	0.6%
Finance, insurance, and real estate	2.3%	2.7%	2.8%
Services	0.9%	1.0%	1.0%
Farm earnings	2.4%	1.6%	1.0%
Federal, state, and local government	5.4%	4.8%	3.8%
Growth in Gross Labor Earnings	**1979–1999**	**1979–1989**	**1989–1999**
Total Gross Labor Earnings	81.9%	29.9%	40.0%
Agriculture services, forestry, fishing, and other	-53.4%	-46.1%	-13.6%
Mining	34.0%	13.3%	18.3%
Construction	11.6%	0.0%	11.7%
Manufacturing	-46.9%	-41.2%	-9.8%
Transportation and public utilities	57.3%	21.5%	29.5%
Wholesale trade	54.0%	15.5%	33.4%
Retail trade	124.3%	55.8%	44.0%
Finance, insurance, and real estate	111.9%	43.4%	47.8%
Services	-28.1%	-12.7%	-17.7%
Farm earnings	28.2%	14.7%	11.8%
Federal, state, and local government	1.0%	0.5%	0.5%

Source: Data derived from the U.S. Department of Commerce, Bureau of Economic Analysis, Table CA05, Personal Income by Major Source and Earnings by Industry, 1979–1999.

ECONOMIC IMPACT ANALYSIS METHODOLOGY

The following section provides a detailed summary of the economic impact analysis by resources use.

Oil and Gas Exploration and Development

The economic impact of oil and gas operations was analyzed in two phases:

- Phase I: Exploration and Development
- Phase II: Production.

Phase I considered how many exploratory and development wells would be drilled under each alternative in Jack Morrow Hills (JMH), and what percentage of these wells would by completed. This includes both conventional wells and coalbed methane development. Table A16-7 summarizes the economic assumptions used in analyzing the exploration and development phase associated with each alternative.

Table A16-7. Economic Assumptions for Gas Exploration and Development

	Gas Wells Drilled and Completed[a] (2001$)	Gas Wells Drilled and Abandoned (2001$)	Coalbed Methane Wells Drilled and Abandoned (2001$)
Direct Expenditures	$620,784	$303,830	$142,640
Total Economic Impact Per Well	$847,180	$413,090	$193,957
Earnings Per Well	$130,697	$62,997	$29,583
Jobs Per Well	4.395	2.121	0.996

a Conventional wells were assumed to average 9,000 feet in depth.

b Coalbed methane wells were assumed to average less than 5,000 feet in depth.

Phase II considered the economic impact of producing additional gas reserves as a result of the exploration and development under Phase I. This analysis considered only the production of gas reserves given the small amount of current and expected crude oil production within JMH. In addition, an economic benefit would be obtained from any coalbed methane production, but a production estimate could not be made at this time. Table A16-8 summarizes the economic assumptions used to analyze gas production estimated to occur under each alternative.

Table A16-8. Economic Assumptions for Gas Production

	Natural Gas (MCF) (2001$)
Value of Production	$2.81
Total Economic Impact	$2,793
Earnings	$188
Jobs	0.005387

The average price of natural gas used for this analysis was estimated with data from the Energy Information Administration, which published a 20-year gas price forecast for the Rocky Mountain Region (EIA 2001). This price forecast was adjusted for inflation and averaged more than 17 years (2003–2020) to estimate an average future price for gas production in JMH as summarized in Table A16-8.

Grazing

Grazing activities were analyzed under each alternative as follows. First, BLM was contacted regarding historical grazing use within JMH. Table 3-7 in the final EIS for the JMH CAP provides a summary of historical grazing use by operator for the last 5 years. The value of grazing animal unit months (AUM) for cattle and sheep was estimated as summarized in Tables A16-9 and A16-10. For cattle AUMs, as shown in columns 2 and 3, data were obtained from the Wyoming Agricultural Statistical Service and include the value of cattle sold in Wyoming each year between 1996 and 2000. Total cattle sales were divided by the number of cows that have calved in each year, which provided a value per cow sold as summarized in column 4. The value per cow was then divided by an AUM conversion factor, which resulted in an estimated value per AUM per year. This annual value was adjusted for inflation each year as summarized in column 7. The economic analysis used the 5-year average value of AUMs, or $33.59/AUM in inflation-adjusted dollars.

Table A16-9. Estimated Value of Cattle AUMs

Year	Value of Production (1,000$)[a]	Cows that have Calved (1,000 Head)[a]	Value Per Cow	AUM Conversion (AUMs/cow)[b]	Value of Production Per AUM (Nominal $)	Value of Production Per AUM (Real 2001$)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1996	$359,805	810	$444.20	16	$27.76	$30.36
1997	$442,717	870	$508.87	16	$31.80	$34.12
1998	$400,637	880	$455.27	16	$28.45	$30.10
1999	$452,058	830	$544.65	16	$34.04	$35.55
2000	$490,707	830	$591.21	16	$36.95	$37.80
					5-year Average: $33.59	

[a] Wyoming Agricultural Statistics.

[b] Workman, J.P. 1986. *Range Economics*. New York: McMillian Publishing, Inc.

A similar method was used to value sheep AUMs as summarized in Table A16-10. The value and number of AUMs per alternative were then used in combination with the input-output (I/O) model to estimate economic impacts of grazing under each alternative. The economic assumptions used to analyze grazing impacts are summarized in Table A16-11.

Table A16-10. Value of Sheep AUMs

Year	Value of Production Sheep and Lambs (1,000$)[a]	Value of Wool Production (1,000$)[a]	Total Value of Production	Ewes 1 Year and Older (1,000 Head)[a]	Value Per Ewe	Conversion to AUMs (AUMs/ Ewe)[b]	Value of Production Per AUM (Nominal $)	Value of Production Per AUM (Real 2001$)
(1)	(2)	(3)	(4)=(2)+ (3)	(5)	(6) = (4)/(5)	(7)	(8)=(6)/(7)	(9)
1996	$31,708	$4,997	$36,705	455	$80.67	3.2	$25.21	$27.57
1997	$33,935	$5,576	$39,511	450	$87.80	3.2	$27.44	$29.44
1998	$24,493	$4,266	$28,759	430	$66.88	3.2	$20.90	$22.11
1999	$22,489	$2,416	$24,905	385	$64.69	3.2	$20.22	$21.11
2000	$23,448	$2,143	$25,591	365	$70.11	3.2	$21.91	$22.42
							5-year Average: $24.53	

[a] Wyoming Agricultural Statistics.

[b] Workman, J.P. 1986. *Range Economics*. New York: McMillian Publishing, Inc.

Table A16-11. Economic Assumptions for Grazing

	Cattle Grazing (2001$)	Sheep Grazing (2001$)
Direct Expenditures	$33.53	$24.53
Total Economic Impact Per AUM	$65.58	$46.18
Earnings Per AUM	$11.90	$10.09
Jobs Per AUM	0.000654	0.000656

Recreation

Recreational impacts were analyzed as follows. The number of Recreational Visitor Days (RVD) was estimated for each alternative, considering several assumptions. These assumptions are summarized in Table A16-12. Once the number of RVDs was estimated by activity, the RVDs were separated into resident and nonresident use and analyzed. Residents were considered any individuals living in the three-county study area, whereas nonresidents lived outside the three-county region. Residents of the study area associated with big game hunting were determined by evaluating zip codes of hunters that applied for licensees from the Wyoming Game and Fish Department within the relevant hunting areas. This information is not available for upland species, so sage-grouse nonresidents include only out-of-state visitors. Residents and nonresidents participating in off-highway vehicle (OHV) and other dispersed use were based on observations of the BLM staff for this area. Resident and nonresident visits are summarized and explained in Section 3.4 (Table 3-21).

The economic impact of recreation in JMH considered activities only of nonresidents. This is based on the theory that nonresidents provide an economic stimulus to the area due to increased expenditures. Regional economic impact modeling (I/O models) evaluates the additional economic activity associated with "new" money brought into an economy. This can occur as goods and services are produced by local firms and exported to entities outside the region (e.g., agricultural products, oil and gas production). In addition, new money can come into an economy as visitors come to the area and spend money. I/O models estimate the additional economic activity that occurs with the new money expenditures. Therefore, nonresident spending is evaluated when determining the economic impacts of recreation. However, this does not imply that recreational activities are not important to the quality of life to residents in the area. Total annual recreational expenditures of nonresidents were estimated for each alternative using the estimated RVDs per activity and the average expenditures per day per activity. Table A16-13 summarizes the average expenditures used for each activity and summarizes other economic assumptions used to estimate the economic impact of recreation in JMH.

The Wyoming State Office Reservoir Management Group and Rock Springs Field Office report for lessee payments to the United States is included in this appendix for reference purposes.

Table A16-12. Recreation Assumptions

Use Type	No Action	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Non-Consumptive					
OHV	OHV use is estimated to increase by 2.5% per year until 2010, when OHV use will remain constant until the end of study period. Increases in OHV use are expected as a result of improvements in facilities near Sand Dunes area.	OHV use is expected to increase by 2.5% per year until 2008, when OHV use will remain constant until the end of study period. Increases in OHV use are expected as a result of improvements in facilities near Sand Dunes area. OHV will not increase as much as No Action because of limits in access.	OHV use is expected to remain constant during first 5 years of study period, then decline by 10% during next 15 years because of limited access and no improvements in facilities near Sand Dunes area.	OHV use is expected to remain constant over the study period because of limited access and no improvements in facilities near Sand Dunes area	OHV use is estimated to increase by 2.5% per year until 2010, when OHV use will remain constant until the end of study period. Increases in OHV use are expected due to improvements in facilities near Sand Dunes area.
Other Recreational Uses	Nonconsumptive RVDs are estimated to increase by 1.5% per year over the next 20 years. Some recreational planning will occur under this alternative, but not at the same level of effort as for Alternatives 2 and 3. Limits on dispersed camping are not as strong under this alternative as with Alternatives 2 and 3, which will increase camping activities.	Nonconsumptive RVDs are estimated to increase by 1.5% over the next 5 years, then remain constant for the remainder of the study period. Recreational planning will occur under this alternative, but not at the same level as for Alternatives 2 and 3. Restrictions on dispersed camping are not as strong as under Alternatives 2 and 3. Recreation is not expected to increase throughout the study period because of increased development activities.	Nonconsumptive use is expected to increase by 1% per year over the study period. This is due to the increased recreational planning and interpretive prospectus development for several important sites. However, dispersed camping activities would be limited, restricting growth of this activity for this area.	Nonconsumptive use is expected to increase by 1% per year over the study period. This is due to the increased recreational planning and interpretive prospectus development for several important sites. However, dispersed camping activities would be limited, restricting growth of this activity for this area.	Nonconsumptive RVDs are estimated to increase by 2% per year over the next 20 years. This is due to the increased recreational planning and interpretive prospectus development for several important sites. Dispersed camping would not be limited as under Alternatives 2 and 3, which will allow for increased camping opportunities in the planning area.

Table A16-12. Recreation Assumptions (Continued)

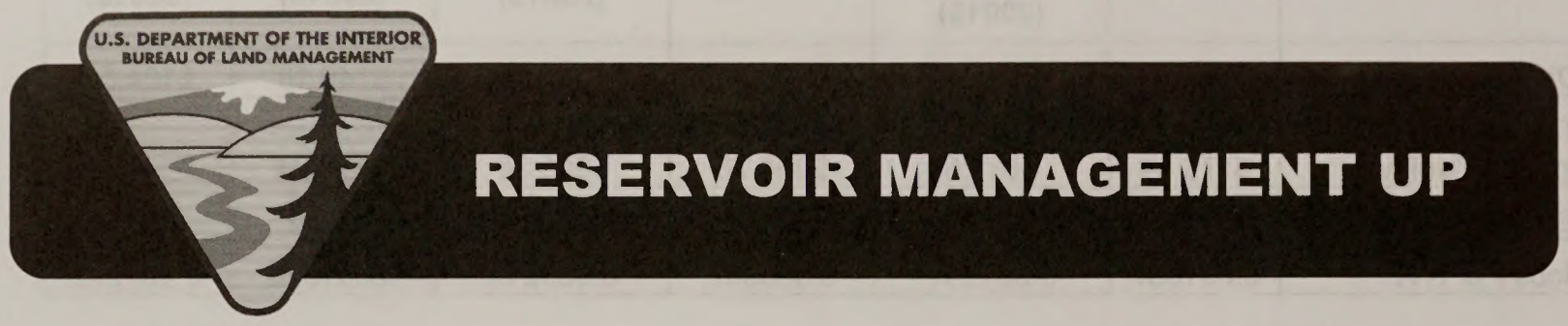
Use Type	No Action	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Consumptive					
Elk	Hunting days for elk are expected to remain constant at 5-year historic average for the entire planning period. Wyoming G&F will not increase the number of licenses, and changes in management should not significantly disrupt current hunting activities.	Hunting days for Elk are expected to increase 10% during the first 5 years of the study period because of increased development that is likely to disperse Elk in the planning area. During the second 5 years of the study period, hunting days are expected to fall as the herd objective is reached and development continues. The remaining years of the study period, hunting days for Elk are expected to remain constant.	Hunting days for Elk are expected to increase by 10% per year during the first 5 years of the study period, then remain constant for the rest of the study period. The increase follows recent trends in hunting days in the area. In addition, hunting days are expected to increase under this alternative because of access restrictions.	Hunting days for Elk are expected to remain constant at 5-year historic average for the entire planning period. Wyoming G&F will not increase the number of licenses, and changes in management should not significantly disrupt current hunting activities.	Hunting days for Elk are expected to remain constant at 5-year historic average for the entire planning period. Wyoming G&F will not be increasing the number of licenses, and changes in management should not significantly disrupt current hunting activities.
Antelope	Hunting days for antelope are expected to remain constant at the 5-year historic average during the study period.	Same as No Action	Same as No Action	Same as No Action	Same as No Action
Mule Deer	Hunting days for mule deer are expected to remain constant at the 5-year historic average during the study period.	Same as No Action	Same as No Action	Same as No Action	Same as No Action
Sage-Grouse	Hunting days for sage-grouse are expected to decline during the study period as population numbers fall.	Same as No Action	Hunting days for sage-grouse are expected to stay constant at current levels.	Same as No Action	Hunting days for sage-grouse are expected to stay constant at current levels.

Data Type	No Action	Alternative 1	Alternative 2	Alternative 3	Proposed Mgmt Alt
Commodities					
Lease Type	No Action	Alternative 1	Alternative 2	Alternative 3	Proposed Mgmt Alt

Table A16-13. Economic Assumptions for Recreation

	OHV (2001$)	Other Dispersed Recreation (2001$)	Elk Hunting (2001$)	Antelope Hunting (2001$)	Mule Deer Hunting (2001$)	Sage-Grouse (2001$)
Direct Expenditures	$124.70	$59.00	$256.82	$257.06	$149.18	$104.58
Total Economic Impact Per RVD	$173.44	$86.66	$354.76	$355.36	$194.24	$142.62
Earnings Per RVD	$24.50	$14.12	$50.72	$48.91	$22.62	$18.71
Jobs Per RVD	0.001687	0.001051	0.003307	0.003214	0.001525	0.001272

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



WYOMING STATE OFFICE

WYOMING STATE OFFICE
RESERVOIR MANAGEMENT GROUP AND
ROCK SPRINGS FIELD OFFICE

LESSEE PAYMENTS TO THE UNITED STATES FOR

NON-PRODUCING OIL AND GAS LEASES

IN THE JACK MORROW HILLS EIS AREA

ROCK SPRINGS FIELD OFFICE

WYOMING

November 25, 2002

Lessee Payments to the United States For Non-Producing Oil and Gas Leases in the Jack Morrow Hills

Summary

We prepared this report at the request of the Rock Springs Field Office, Assistant Field Manager and the Jack Morrow Hills Project Coordinator. We were asked to prepare an analysis to determine the payments that have been made to the United States to purchase and maintain leases in the Jack Morrow Hills area. A review of those payments is required in order to assist in the determination of the potential costs that would be associated with a proposed "lease buyback" recommendation for Alternative 2 of the Draft Jack Morrow Hills EIS. The Coordinator asked that the underlying assumption for this estimate would be that productive lands not be considered for any potential "lease buyback."

This report summarizes only those payments made to the United States to purchase and maintain leases in the Jack Morrow Hills area. Those costs include payment of bonus bids, rentals, and application or filing fees. It does not review any other costs such as seismic acquisition and interpretation, business overhead, permitting, etc., that the lessee's may have already incurred to manage and explore their leases. Also not reviewed in this report is an estimate of the potential hydrocarbon resource that the lessee may expect to develop if allowed. We believe that any complete estimate of lease buyback costs would also need to consider these items when negotiating with a potential willing seller.

We calculated lease payments on a dollar per acre basis for all active leases included in our study. We found that payments to date have ranged from a low of $4.08 per acre for Lease WYW 147705 to a high of $153.38 per acre for Lease WYW 135785. The average payment for the 204 leases included in this review has been $21.50 per acre.

Criteria for Lease Exclusion

We used the Bureau of Land Management's LR2000 online database (http://lr2000.blm.gov/) to access all active lease records for the Jack Morrow Hills area. The Coordinator had requested that producing leases be excluded from this analysis. We determined that "producing leases" are those that are Held By Production because they are in a producing unit (Buccaneer, Nitchie Gulch, Rim Rock, or Steamboat Mountain Unit) or Communitization Agreement or because they contain a producing well. Forty-two leases are Held By Production and those "producing leases" were excluded from our study.

The LR2000 database was created circa 1988, and consequently a complete history of payments was not available for all older leases. We were able to project payments back to issue date for some of the older leases, but could not project the entire rental history for all of them. Ten leases were excluded from analysis because we could not project their entire rental history. We found 204 leases, covering 230,693.34 acres, which could be used for analysis. A summary of all 204 leases is included in the attached table.

Lease Payments Made

Three types of payments may be made to the United States to purchase and maintain the right to develop oil and gas resources on federal lands in the Jack Morrow Hills area. The first payment that may be made is a lease bonus. Most of the 204 leases have been opened to a bidding process and 147 (72%) have been leased with a bonus bid. The other 57 were leased without a bonus bid. The minimum lease bonus bid allowed is $2.00 per acre. Our LR2000 online database reports the winning bonus bid on a per acre basis. Those bids have ranged from $2.00 to $140.00 per acre (see "Bonus Bid" on attached table). We used the bonus bid to then calculate the "Lease Bonus Bid Paid" for the lands in each lease (see attached table). A total of $2,347,749 in lease bonus bids has been paid.

The second payment made on the 204 leases is an annual rental. The annual rental is paid unless a suspension has been approved. Lease segregation, assignment, and relinquishment affeet the total acres within a lease and eonsequently the rental paid. The LR2000 reeords of rental payments had to be adjusted where lease acre ehanges due to segregation, assignment, and relinquishment had been made. A "Lease Rental Paid" ealeulation was made for eaeh lease (see attaehed table). Individual lease rentals have ranged from $180 to $82,930.50. A total of $2,612,316.06 in rental has been paid to date on the 204 aetive leases reviewed in the Jaek Morrow Hills area.

The third payment made is an applieation or filing fee. We have assumed that this fee averages $75 per lease, or $15,300 for the 204 leases.

The per acre amount paid to the government, to date, for each lease is ealculated as follows:

Lease Bonus Bid Paid + Lease Rental Paid + Applieation Fee / Lease Acres

Our ealeulations show that payments to date have ranged from $4.08 per acre to $153.38 per aere (see attached table). The average payment for the 204 leases ineluded in this review has been $21.50 per acre.

JMH Lease Information

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
4	50508	638.65	23N 104W 1: S2NW, SW, lots 3,4 2: S2N2, lots 1-4	6/1/1975	3/22/2002		$0.00	$2,556.00	$4.12	No
154	96020	1826.6	26N 102W 30: E2, E2W2, LOTS 1-4 31: E2, NENW, SESW, LOTS 1-4 32: ALL	12/1/1985	none		$0.00	$32,713.00	$17.95	Segregation
146	96029	240	26N 103W 25: E2NW, SWNW, N2SE, SWSE	11/1/1985	none		$0.00	$6,245.00	$26.33	No
212	97241	1646.44	23N 103W 1: S2N2, S2, LOTS 1-4 14: E2 23: NENE 24: E2 24N 103W 25: N2SW, LOTS 1 & 2 26: E2NW, W2SE, SESE	1/1/1986	none		$0.00	$36,234.00	$22.05	No
224	99297	395.79	24N 102W 30: LOTS 1 & 2 31: W2NE	5/1/1986	none		$0.00	$3,960.00	$10.19	No
246	101715	640	23N 102W 8: ALL	11/1/1986	none		$0.00	$5,120.00	$8.12	No
228	101716	637.06	23N 102W 5: S2NE, SE, LOTS 1 & 2 24N 102W 32: E2	10/1/1986	none		$0.00	$5,742.00	$9.13	No
222	103470	2560	24N 102W 21: ALL 22: ALL 27: ALL 28: ALL	2/1/1987	none		$0.00	$20,736.00	$8.13	No
256	103476	1200	23N 103W 12: ALL 13: N2, SW, N2SE	2/1/1987	none		$0.00	$10,800.00	$9.06	No
182	106130	2360	25N 103W 13: ALL 14: N2, SW, W2SE 23: W2E2, W2, SESE 24: ALL	11/1/1987	none		$0.00	$66,080.00	$28.03	Segregation
169	107597	320	25N 102W 15: W2	3/1/1988	none		$0.00	$4,050.00	$12.89	No
172	108031	40	25N 102W 20: SESE	3/1/1988	none		$0.00	$720.00	$19.88	Segregation
159	108056	493.28	22N 105W 2: LOTS 5-12 3: LOTS 5, 6, 11, 12	3/1/1988	none		$0.00	$2,470.00	$5.16	Segregation

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
234	108058	960	23N 105W 34: E2 35: ALL	3/1/1988	none		$0.00	$9,600.00	$10.08	Relinquishment & Segregation
227	108862	1692.89	23N 102W 5: S2NW, E2SW, LOTS 3 & 4 6: S2NE, SENW, E2SW, SE, LOTS 1-7 7: E2, E2W2, LOTS 1-4 24N 102W 31: SESW, S2SE 32: S2SW, LOT 4	5/1/1988	none		$0.00	$49,102.00	$29.05	No
165	108863	640	25N 102W 8: ALL	5/1/1988	none		$0.00	$7,253.34	$11.45	Segregation
170	115575	150.3	25N 102W 15: LOTS 1-4	4/1/1989	none		$0.00	$3,368.00	$22.91	No
247	115934	936.88	23N 102W 17: N2NE, NW, N2SW 18: E2, E2W2, LOTS 1-4	5/1/1989	none	$14.00	$13,118.00	$8,901.50	$23.58	Segregation
220	115935	1259.48	24N 102W 13: ALL 24: E2, E2W2, NWNW, LOTS 1-3	5/1/1989	none	$2.00	$2,520.00	$11,970.00	$11.56	Segregation
219	115936	2459.54	24N 102W 14: ALL 15: ALL 20: ALL 23: N2NE, SWNE, W2, LOTS 1 & 2	5/1/1989	none	$2.00	$4,920.00	$28,290.00	$13.53	No
205	117839	1160	24N 103W 13: W2 14: ALL 23: W2W2 24: SESE	11/1/1989	none	$12.00	$13,920.00	$11,020.00	$21.56	Segregation
204	117840	1520	24N 103W 11: NE, NENW, S2NW, S2 12: N2, SW, NESE, W2SE 13: E2	11/1/1989	none	$10.00	$15,200.00	$19,000.00	$22.55	No
214	117841	800	24N 103W 34: N2, SW, N2SE, SWSE 35: NWNE, NW	11/1/1989	none	$11.00	$8,800.00	$10,000.00	$23.59	No
225	118721	40	24N 102W 30: SESW	1/1/1990	none		$0.00	$380.00	$11.38	No
226	120587	80	24N 102W 29: SWNW 30: SENE	7/1/1990	none	$30.00	$2,400.00	$640.00	$38.94	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
3	126047	2480	23N 101W 2: S2SW, SE 11: ALL 12: ALL 13: N2N2 14: ALL 15: N2N2	2/1/1992	1/31/2002		$0.00	$43,400.00	$17.53	No
6	126761	777.67	24N 101W 3: lot 8 4: S2N2, SW, W2SE, lots 5-8 7: lots 5-8 16: lots 1-7	5/1/1992	4/30/2002		$0.00	$12,448.00	$16.10	No
5	126762	640	26N 101W 34: ALL	5/1/1992	4/30/2002		$0.00	$10,240.00	$16.12	No
145	127446	2560	26N 103W 27: ALL 33: ALL 34: ALL 35: ALL	9/1/1992	none		$0.00	$34,560.00	$13.53	No
7	127448	1266.8	23N 106W 10: ALL 19: E2, E2W2, lots 1-4	9/1/1992	8/31/2002		$0.00	$22,172.50	$17.56	No
8	127850	600	25N 103W 21: NE, NENW, S2NW, S2	11/1/1992	10/31/2002		$0.00	$8,400.00	$14.13	No
10	128244	1183.66	23N 100W 6: E2SW, SE, lot 1-4 7: E2, E2W2, lots 5-8 9: W2NW, SENW, SW	1/1/1993	12/31/2002		$0.00	$18,352.00	$15.57	No
9	128248	602.1	26N 102W 3: S2N2, S2, lots 2-4	1/1/1993	12/31/2002		$0.00	$9,826.50	$16.44	No
166	128872	640	25N 102W 9: ALL	5/1/1993	none		$0.00	$9,066.76	$14.28	Segregation
11	128873	200	25N 104W 10: SW 11: SENE	5/1/1993	4/30/2003		$0.00	$3,100.00	$15.88	No
14	129124	1000	23N 102W 13: N2NW 22: N2 24: N2NE, SWNE, NW 26: S2	6/1/1993	5/31/2003	$2.00	$2,000.00	$15,500.00	$17.58	No
13	129130	640	23N 106W 14: S2NE, SW 15: S2N2, W2SE 23: N2NE, S2NW	6/1/1993	5/31/2003	$2.00	$1,280.00	$8,000.00	$14.62	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
12	129131	1280	23N 106W 27: ALL 33: ALL	6/1/1993	5/31/2003	$2.00	$2,560.00	$17,920.00	$16.06	No
155	129606	640	26N 102W 29: ALL	7/1/1993	none	$2.00	$1,280.00	$9,066.64	$16.28	No
210	129607	622.92	24N 103W 30: E2, E2W2, LOTS1-4	7/1/1993	none	$13.00	$8,099.00	$7,164.50	$24.62	No
144	129608	640	26N 103W 28: ALL	7/1/1993	none	$2.00	$1,280.00	$8,640.00	$15.62	No
149	129698	2548.9	26N 102W 7: E2W2, SE, LOTS 1-4 17: ALL 18: E2, E2W2, LOTS 1-4 19: LOTS 1-4 20: ALL	8/1/1993	none		$0.00	$29,313.50	$11.53	No
15	129748	1477.84	25N 104W 31: E2SW, SE?, lots 3 & 4 32: S2 24N 105W 1: E2SW, SE, lots 1-4, W2SW excl. 17.68 ac RR ROW 2: SW, N2SE, SWSE, lots 1-4 11: NWNW	7/1/1993	6/30/2003		$0.00	$22,909.00	$15.55	No
16	129911	947.26	25N 104W 30: E2 31: E2NE, E2NW, W2NE excl 12.62 ac RR ROW, lots 1,2 32: N2	8/1/1993	7/31/2003		$0.00	$14,694.00	$15.59	Relinquishment
17	130222	2280	23N 105W 9: N2, N2SW, SESW, SE 10: ALL 11: ALL 12: W2, W2SE	9/1/1993	8/31/2003	$2.00	$4,560.00	$35,340.00	$17.53	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
18	130363	5112.37	26N 103W 2: SENE 11: SESE 12: ALL 13: ALL 14: S2 15: SW 18: NE, E2W2, N2SE, SWSE SESE excl 6.43 ac RR ROW lots 1-4 19: SENE, NESW, NESE, S2SE, LOT 2, NWNE, E2NW excl 21.12 ac RR ROW 20: ALL 21: S2 22: ALL 30: NE, E2NW, lots 1,2 31: NESW, N2SE, lot 3 32: N2S2	10/1/1993	9/30/2003		$0.00	$69,025.50	$13.52	No
160	130450	621.24	25N 101W 6: S2NE, SENW, E2SW, SE, LOTS 1-7	10/1/1993	none		$0.00	$8,086.00	$13.14	No
23	130711	2557.16	24N 102W 3: S2N2, S2, lots 1-4 4: S2N2, S2, lots 1-4 5: SWNE 9: ALL 10: ALL	12/1/1993	11/30/2003	$2.00	$5,116.00	$34,533.00	$15.53	No
221	130712	639.97	24N 102W 19: N2NE, SENE, NENW, NESE, S2SE, LOTS 1-7 29: N2NW, SENW	12/1/1993	none	$6.00	$3,798.00	$1,899.00	$9.02	No
171	130714	2400	25N 102W 13: ALL 14: ALL 23: N2, N2S2 24: ALL	12/1/1993	none	$2.00	$4,800.00	$27,600.00	$13.53	No
175	130715	160	25N 102W 23: S2S2	12/1/1993	none	$2.00	$320.00	$1,840.00	$13.97	No
22	130719	622.68	24N 103W 19: E2, E2W2, lots 1-4	12/1/1993	11/30/2003	$30.00	$18,690.00	$8,410.50	$43.64	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
24	130722	960	23N 104W 21: NE, N2NW, SWNW 28: NENE 33: ALL	12/1/1993	11/30/2003	$13.00	$12,480.00	$11,040.00	$24.58	No
19	130723	882.18	25N 104W 4: S2N2, S2, lots 1-4 9: W2NE, NW	12/1/1993	11/30/2003	$6.00	$5,298.00	$11,920.50	$19.60	No
20	130724	880	25N 104W 10: SWNE, NW, SE 11: N2NE, SWNE, W2 12: E2NW	12/1/1993	11/30/2003	$6.00	$5,280.00	$11,880.00	$19.59	No
21	130725	1440	25N 104W 12: S2 14: E2 24: ALL 26: N2NE, SENE, NENW	12/1/1993	11/30/2003	$6.00	$8,640.00	$19,440.00	$19.55	No
33	131363	480	24N 101W 7: E2, E2W2	2/1/1994	1/37/04	$3.00	$1,440.00	$6,480.00	$16.66	No
28	131364	120	26N 101W 5: W2SW, SESW	2/1/1994	1/31/2004	$2.00	$240.00	$1,620.00	$16.13	No
163	131370	159.47	25N 102W 7: E2SW, LOTS 3 & 4	2/1/1994	none	$3.00	$478.00	$720.00	$7.98	Assignment
36	131375	600	23N 103W 23: NWSW 26: N2, N2SW, SE	2/1/1994	1/31/2004	$27.00	$16,200.00	$8,100.00	$40.63	No
32	131376	80	24N 103W 17: W2SE	2/1/1994	1/31/2004	$25.00	$2,000.00	$1,080.00	$39.44	No
29	131378	800	26N 103W 23: NE, NWNW, SW, SESE 24: NE, NWNW, SW, SESE	2/1/1994	1/31/2004	$2.00	$1,600.00	$10,800.00	$15.59	No
147	131379	400	26N 103W 25: NE, NWNW, SW, SESE	2/1/1994	none	$2.00	$800.00	$5,333.36	$15.52	Segregation
35	131382	1210.6	23N 104W 19: SESW 30: E2, E2W2, LOTS 1-4 31: E2, E2W2, LOTS 1-4	2/1/1994	1/31/2004	$26.00	$31,486.00	$16,348.50	$39.58	No
34	131384	1280	23N 106W 34: ALL 35: ALL	2/1/1994	1/31/2004	$6.00	$7,680.00	$17,280.00	$19.56	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
25	131433	6142.68	25N 100W 2: S2N2, S2, lots 1-4 3: S2N2, S2, lots 1-4 11: ALL 18: E2, E2W2, lots 1-4 19: E2, E2W2, lots 1-4 20: ALL 21: ALL 30: E2, E2W2, lots 1-4 31: NE, E2NW, N2SE 32: ALL	1/1/1994	12/31/2003		$0.00	$82,930.50	$13.51	No
27	131438	2197.7	23N 105W 2: SW, S2SE 3: S2 4: S2 13: ALL EXCL 2.3 RR ROW 14: ALL 17: NENW	1/1/1994	12/31/2003		$0.00	$29,673.00	$13.54	No
26	131439	291.62	24N 99W 6: lots 10-14 7: lots 5-8	1/1/1994	12/31/2003		$0.00	$3,942.00	$13.77	No
31	131440	640	25N 101W 26: ALL	2/1/1994	1/31/2004		$0.00	$8,640.00	$13.62	No
38	131874	1282.07	25N 101W 3: S2N2, S2, LOTS 1-4 4: S2N2, S2, LOTS 1-4	4/1/1994	3/31/2004	$5.00	$6,415.00	$7,698.00	$11.07	No
37	131875	639.6	25N 101W 5: S2N2, S2, LOTS 1-4	4/1/1994	3/31/2004	$7.00	$4,480.00	$8,640.00	$20.63	No
39	131876	960	25N 101W 7: E2 8: ALL	4/1/1994	3/31/2004	$10.00	$9,600.00	$12,960.00	$23.58	No
40	131877	1280	25N 101W 9: ALL 10: ALL	4/1/1994	3/31/2004	$7.00	$8,960.00	$14,720.00	$18.56	No
157	131882	640	26N 102W 33: N2, SW 34: NW	4/1/1994	none	$7.00	$4,480.00	$6,933.36	$17.95	Segregation
44	131890	799.32	25N 103W 2: S2NW, LOTS 3 & 4 3: S2N2, S2, LOTS 1-4	4/1/1994	3/31/2004	$26.00	$20,800.00	$10,800.00	$39.63	Segregation
180	131891	160	25N 103W 12: W2W2	4/1/1994	none	$42.00	$6,720.00	$1,733.36	$53.30	Segregation
45	131892	640	25N 103W 28: ALL	4/1/1994	3/31/2004	$43.00	$27,520.00	$8,640.00	$56.62	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
46	131893	120	25N 103W 33: W2NW, NWSW	4/1/1994	3/31/2004	$32.00	$3,840.00	$1,380.00	$44.13	No
41	131897	640	25N 104W 17: ALL	4/1/1994	3/31/2004	$2.00	$1,280.00	$8,640.00	$15.62	No
42	131898	560	25N 104W 29: W2NE, W2, SE	4/1/1994	3/31/2004	$14.00	$7,840.00	$7,560.00	$27.63	No
49	132388	613.9	24N 103W 6: SENW, E2SW, LOTS 3-7 12: W2	6/1/1994	5/31/2004	$33.00	$20,262.00	$8,289.00	$46.63	No
47	132389	1077.76	25N 103W 7: E2, E2W2, LOTS 1-4 8: NWNW 18: NWNE, NENW 25N 104W 13: E2E2 25: E2E2	6/1/1994	5/31/2004	$7.00	$7,546.00	$14,553.00	$20.57	No
188	132393	1960	24N 104W 13: W2E2, W2 23: N2S2, SESW, SWSE 24: ALL 26: NE, NENW, S2NW, S2	6/1/1994	none	$100.00	$196,000.00	$18,620.00	$109.54	No
48	132394	1240	25N 104W 22: W2NE, SENE, W2, SE 23: ALL	6/1/1994	5/31/2004	$28.00	$34,720.00	$16,740.00	$41.56	No
168	133028	1881.06	25N 102W 17: ALL 19: E2, E2W2, LOTS 1-4 20: N2, SW, N2SE, SWSE	8/1/1994	none	$28.00	$52,696.00	$22,270.00	$39.89	No
50	133040	1271.24	22N 105W 18: E2, E2W2, LOTS 5-8 19: E2, E2W2, LOTS 5-8	8/1/1994	7/31/2004	$2.00	$2,544.00	$17,172.00	$15.57	No
232	133041	1760	23N 105W 23: E2, SW 24: ALL 25: ALL	8/1/1994	none	$27.00	$47,520.00	$13,200.00	$34.54	Segregation
51	133043	2160	23N 106W 13: ALL 14: N2NE, NW 15: SW 23: S2NE, N2NW, S2 24: ALL	8/1/1994	7/31/2004	$7.00	$15,120.00	$29,160.00	$20.53	No
59	133726	1521.05	24N 99W 5: S2NE, SWNW, N2S2, SWSW, SESE, LOTS 5-10 20: ALL 29: N2	10/1/1994	9/30/2004	$120.00	$182,640.00	$20,547.00	$133.63	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
56	133732	1281.6	25N 99W 7: E2, E2W2, LOTS 1-4 9: ALL	10/1/1994	9/30/2004	$37.00	$47,434.00	$17,307.00	$50.57	No
57	133735	1280	25N 99W 17: ALL 20: ALL	10/1/1994	9/30/2004	$28.00	$35,840.00	$17,280.00	$41.56	No
58	133737	1079.34	24N 100W 11: NE 15: S2NE, SENW, LOT 2 23: E2 24: W2 26: N2NE, SWNE	10/1/1994	9/30/2004	$36.00	$38,880.00	$14,580.00	$49.60	No
53	133747	320	26N 102W 5: SE 7: NE	10/1/1994	9/30/2004	$2.00	$640.00	$3,680.00	$13.73	No
54	133750	1160	25N 103W 8: E2, NENW, S2NW, SW 17: W2 18: E2NE, SE	10/1/1994	3/30/2004	$7.00	$8,120.00	$15,660.00	$20.56	No
55	133751	1879	25N 103W 29: ALL 31: E2, E2W2, LOTS 1-4 32: N2, SW, N2SE, SWSE	10/1/1994	9/30/2004	$2.00	$3,760.00	$25,380.00	$15.55	No
60	133752	480	23N 104W 20: NE, SW 32: SW	10/1/1994	9/30/2004	$38.00	$18,240.00	$6,480.00	$51.66	No
61	133753	1920	23N 104W 22: ALL 23: ALL 26: N2, N2SE, SESE 27: SW, NWSE	10/1/1994	9/30/2004	$45.00	$86,400.00	$22,080.00	$56.54	No
62	134401	2560	25N 102W 14: ALL 15: ALL 22: ALL 23: ALL	11/1/1994	10/31/2004	$17.00	$43,520.00	$34,560.00	$30.53	No
63	134402	960	25N 101W 32: E2 34: ALL	11/1/1994	10/31/2004	$22.00	$21,120.00	$12,960.00	$35.58	No
197	134415	270.71	24N 103W 2: S2NW, N2SW, SESW, LOTS 3 & 4	11/1/1994	none	$18.00	$4,878.00	$2,574.50	$27.81	No
207	134416	160	24N 103W 20: NW	11/1/1994	none	$29.00	$4,640.00	$1,520.00	$38.97	No
64	134422	320	23N 104W 24: E2	11/1/1994	10/31/2004	$75.00	$24,000.00	$3,680.00	$86.73	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
72	135061	1920	25N 99W 3: S2 4: S2 8: ALL 10: ALL	2/1/1995	1/31/2005	$42.00	$80,640.00	$29,760.00	$57.54	No
73	135062	1281.24	25N 99W 30: E2, E2W2, LOTS 1-4 33: ALL	2/1/1995	1/31/2005	$41.00	$52,562.00	$14,743.00	$52.59	No
74	135074	40	24 100W 22: SWNW	2/1/1995	1/31/2005	$2.00	$80.00	$460.00	$15.38	No
71	135075	1280	25N 100W 13: ALL 24: ALL	2/1/1995	1/31/2005	$31.00	$39,680.00	$14,720.00	$42.56	No
67	135083	1655.1	25N 101W 11: E2 12: W2E2, W2, LOTS 1-4 13: W2E2, W2, LOTS 1-4	2/1/1995	1/31/2005	$13.00	$21,528.00	$19,044.00	$24.56	No
68	135084	1318.74	25N 101W 24: W2E2, W2, LOTS 1-4 25: W2E2, W2, LOTS 1-4	2/1/1995	1/31/2005	$16.00	$21,104.00	$15,168.50	$27.56	No
174	135091	640	25N 102W 22: ALL	2/1/1995	none	$16.00	$10,240.00	$6,826.72	$26.78	No
66	135107	1244.72	22N 104W 6: S2NE, SENW, E2SW, SE, LOTS 1-7 7: E2, E2W2, LOTS 1-4	2/1/1995	1/31/2005	$8.00	$9,960.00	$14,317.50	$19.56	No
189	135109	40	24N 104W 23: SESE	2/1/1995	none	$54.00	$2,160.00	$380.00	$65.38	No
69	135110	2522.57	25N 105W 1: S2N2, SW, W2SE, E2SE EXCL 9.18 AC RR ROW LOTS 1-4 11: ALL 12: ALL EXCL 27.09 AC RR ROW 14: ALL	2/1/1995	1/31/2005	$18.00	$45,414.00	$29,014.50	$29.53	No
70	135111	2477.25	25N 105W 23: ALL 24: ALL EXCL 2.75 AC RR ROW 26: ALL 27: N2, SW, N2SE	2/1/1995	1/31/2005	$34.00	$84,252.00	$28,497.00	$45.54	No
65	135115	1827.96	23N 106W 2: S2N2, S2, LOTS 1-4 21: ALL 30: E2, E2NW, NESW, LOTS 1-3	1/1/1995	12/31/2004	$55.00	$100,540.00	$21,022.00	$66.54	No
77	135785	40	24N 99W 5: SENW	4/1/1995	3/31/2005	$140.00	$5,600.00	$460.00	$153.38	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
78	135786	1459.44	24N 99W 17: W2E2, W2, LOTS 1-4 19: E2, E2W2, LOTS 5-8 30: NE, E2NW, LOTS 5 & 6	4/1/1995	3/31/2005	$28.00	$40,880.00	$16,790.00	$39.57	No
79	135796	1200	23N 104W 28: W2NE, SENE, W2, SE 32: W2NE, SENE, NW	4/1/1995	3/31/2005	$18.00	$21,600.00	$13,800.00	$29.56	No
80	135797	280	23N 104W 32: W2NE, SENE, NW	4/1/1995	3/31/2005	$15.00	$4,200.00	$3,220.00	$26.77	No
76	135798	80	24N 105W 7: E2NW	4/1/1995	3/31/2005	$10.00	$800.00	$800.00	$20.94	No
95	136269	640.4	25N 99W 18: E2, E2W2, LOTS 1-4	5/1/1995	4/30/2005	$5.00	$3,205.00	$6,410.00	$15.13	No
87	136270	316.6	26N 99W 31: E2SW, SE, LOTS 3 & 4	5/1/1995	4/30/2005	$6.00	$1,902.00	$3,170.00	$16.26	No
91	136278	623.93	25N 100W 6: S2NE, SENW, E2SW, SE, LOTS 1-7	5/1/1995	4/30/2005	$7.00	$4,368.00	$6,240.00	$17.12	No
92	136279	1920	25N 100W 8: ALL 9: ALL 17: ALL	5/1/1995	4/30/2005	$8.00	$15,360.00	$19,200.00	$18.04	No
93	136280	2560	25N 100W 23: ALL 27: ALL 28: ALL 29: ALL	5/1/1995	4/30/2005	$7.00	$17,920.00	$25,600.00	$17.03	No
94	136281	640	25N 100W 26: S2 34: S2	5/1/1995	4/30/2005	$7.00	$4,480.00	$6,400.00	$17.12	No
82	136282	1756.1	26N 100W 7: S2NE, SENW, E2SW, SE, LOTS 2-4 28: ALL 33: ALL	5/1/1995	4/30/2005	$5.00	$8,785.00	$20,205.50	$16.55	No
83	136283	2423.84	26N 100W 8: S2N2, S2 17: ALL 18: E2, E2W2, LOTS 1-4 19: E2, E2W2, LOTS 1-4 20: NENE	5/1/1995	4/30/2005	$2.00	$4,848.00	$27,876.00	$13.53	No
88	136287	680	25N 101W 2: SESE 27: ALL	5/1/1995	4/30/2005	$7.00	$4,760.00	$6,800.00	$17.11	No
89	136288	320	25N 101W 11: W2	5/1/1995	4/30/2005	$8.00	$2,560.00	$3,200.00	$18.23	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
90	136289	1280	25N 101W 21: ALL 28: ALL	5/1/1995	4/30/2005	$9.00	$11,520.00	$12,800.00	$19.06	No
143	136290	1400	26N 101W 15: S2SW, SWSE 27: ALL 35: ALL	5/1/1995	none	$2.00	$2,800.00	$13,300.00	$11.55	No
84	136291	1292.32	26N 101W 19: E2, E2W2, LOTS 1-4 21: ALL	5/1/1995	4/30/2005	$2.00	$2,586.00	$14,869.50	$13.57	No
85	136308	1679.64	26N 103W 1: S2N2, S2, LOTS 1-3 8: E2 15: E2, NENW, S2NW 21: N2	5/1/1995	4/30/2005	$7.00	$11,760.00	$16,800.00	$17.05	No
86	136309	637.72	26N 103W 14: N2 31: NE, E2NW, LOTS 1& 2	5/1/1995	4/30/2005	$7.00	$4,466.00	$6,380.00	$17.13	No
81	136320	640	26N 104W 14: ALL	5/1/1995	4/30/2005	$10.00	$6,400.00	$6,400.00	$20.12	No
96	136325	2534.55	23N 105W 18: E2, E2W2, LOTS 1-4 19: E2, E2W2, LOTS 1-4 23N 106W 11: ALL 12: ALL	5/1/1995	4/30/2005	$17.00	$43,095.00	$29,152.50	$28.53	No
97	136806	2102.69	22N 104W 3: S2N2, LOTS 1-4 4: S2N2, S2, LOTS 1-4 5: S2NW, SW, SESE, S2NE, N2SE, SWSE, LOTS 1-4, EXCL 24.33 AC RR ROW 8: SW, E2SE, W2SE, EXCL 12.16 AC RR ROW 9: NW, N2SW	7/1/1995	6/30/2005	$4.00	$8,412.00	$24,185.50	$15.54	No
98	136808	2543.15	22N 104W 18: E2, E2W2, LOTS 1-4 20: E2, W2NW, NWSW, SWSW, EXCL 24.79 AC RR ROW 28: NWNW 30: E2, E2W2, LOTS 1-4 E2, E2W2, SWSW, W2NW, NWSW EXCL 16.98 AC RR ROW	7/1/1995	6/30/2005	$4.00	$10,176.00	$29,256.00	$15.53	No
103	136809	160	23N 104W 21: SE	8/1/1995	7/31/2005	$22.00	$3,520.00	$1,840.00	$33.97	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
102	136810	614.29	23N 104W 29: E2, E2NW, SWSW, W2NW, N2SW SESW, EXCL 25.71 AC RR ROW	7/1/1995	6/30/2005	$8.00	$4,920.00	$7,069.50	$19.64	No
100	136811	1000	25N 104W 11: SE 12: W2NW 14: W2 15: E2, E2SW 22: NENE	7/1/1995	6/30/2005	$3.00	$3,000.00	$11,500.00	$14.58	No
101	136813	640	24N 105W 17: ALL	7/1/1995	6/30/2005	$8.00	$9,920.00	$7,360.00	$27.12	Relinquishment
99	136814	2320	25N 105W 15: ALL 21: N2NW, SE 22: ALL 28: E2, E2W2 33: N2	7/1/1995	6/30/2005	$9.00	$20,880.00	$26,684.00	$20.53	No
104	137340	683.86	22N 105W 7: SENW, E2SW, SE, LOTS 6-13 8: W2SW, SESW	9/1/1995	8/31/2005		$0.00	$7,866.00	$11.61	No
176	137392	1080	25N 102W 29: NE, N2SE, SWSE 31: SE 32: ALL	3/1/1988	none		$0.00	$19,440.00	$18.07	Segregation
173	137393	800	25N 102W 21: SE 28: ALL	5/1/1988	none		$0.00	$11,120.00	$13.99	Segregation
167	137395	640	25N 102W 10: ALL	5/1/1993	none		$0.00	$8,640.00	$13.62	Segregation
43	137396	1280.08	25N 103W 4: S2N2, S2, LOTS 1-4 5: S2N2, S2, LOTS 1-4	4/1/1994	3/31/2004	$26.00	$52,480.00	$17,290.50	$54.56	Segregation
106	137742	800	26N 99W 28: S2S2 33: S2 35: S2	11/1/1995	10/31/2005	$4.00	$3,200.00	$7,600.00	$13.59	No
105	137743	1117	26N 99W 29: S2S2 31: NE, E2NW, LOTS 1 & 2 32: ALL	11/1/1995	10/31/2005	$2.00	$2,234.00	$10,611.50	$11.57	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
108	137747	1349.17	25N 100W 4: LOT 2 5: S2N2, S2, LOTS 1-4 25N 101W 1: SWNE, S2NW, SW, W2SE, LOTS 1-7	11/1/1995	10/31/2005	$4.00	$5,400.00	$15,525.00	$15.57	No
107	137750	601.96	25N 101W 2: S2N2, SW, N2SE, SWSE, LOTS 1-4	11/1/1995	10/31/2005	$4.00	$2,408.00	$6,923.00	$15.63	No
162	137758	2402.02	25N 102W 1: S2N2, S2, LOTS 1-4 2: S2N2, S2, LOTS 1-4 11: E2NE, W2NW, S2 12: ALL	11/1/1995	none	$2.00	$4,806.00	$19,244.50	$10.04	No
109	137766	960	23N 104W 14: S2 27: N2 35: N2	11/1/1995	10/31/2005	$14.00	$13,440.00	$11,040.00	$25.58	No
110	138168	800	25N 104W 21: N2, SW 28: NE, N2NW, SENW, NESW	2/1/1996	1/31/2006	$11.00	$8,800.00	$7,600.00	$20.59	No
112	138169	1640	24N 105W 8: ALL 9: ALL 10: N2NE, SWNE, NW, N2SW	2/1/1996	1/31/2006	$15.00	$24,600.00	$15,580.00	$24.55	No
114	138247	560	23N 105W 1: SWSW 4: SWNW 5: S2N2, S2	2/1/1996	1/31/2006		$0.00	$5,320.00	$9.63	No
113	138248	1253.36	23N 105W 6: S2NE, SENW, E2SW, SE, LOTS 1-7 7: E2, E2W2, LOTS 1-4	2/1/1996	1/31/2006		$0.00	$11,913.00	$9.56	No
118	138511	640	23N 100W 15: NE, S2NW, N2S2, SESE 22: NWNW, S2N2	4/1/1996	3/31/2006	$2.00	$1,280.00	$6,080.00	$11.62	No
116	138512	208.14	24N 100W 6: S2NE, LOTS 8-11	4/1/1996	3/31/2006	$2.00	$418.00	$1,985.50	$11.91	No
115	138516	948.61	26N 101W 12: LOTS 2-4 13: W2E2, LOTS 1-4 24: W2E2, SENW, SW, LOTS 1-4	4/1/1996	3/31/2006	$2.00	$1,898.00	$9,016.00	$11.58	No
117	138656	231.02	24N 103W 4: S2NW, S2SW, LOTS 3&4	4/1/1996	3/31/2006		$0.00	$1,856.00	$8.36	No
124	139232	640	24N 100W 12: N2 25N 100W 35: S2	7/1/1996	6/30/2006	$2.00	$1,280.00	$6,080.00	$11.62	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
125	139245	1280	24N 101W 17: ALL 20: ALL	7/1/1996	6/30/2006	$2.00	$2,560.00	$10,240.00	$10.06	No
126	139246	637.16	24N 101W 19: E2, E2W2, LOTS 5-8	7/1/1996	6/30/2006	$2.00	$1,276.00	$6,061.00	$11.63	No
121	139247	2197.27	25N 101W 7: E2W2, LOTS 1-4 17: ALL 18: E2, E2W2, LOTS 1-4 19: E2, E2W2. LOTS 1-4	7/1/1996	6/30/2006	$8.00	$17,560.00	$20,852.50	$17.52	No
122	139248	1272.01	25N 101W 20: ALL 29: N2 30: NE, E2NW, LOTS 1& 2	7/1/1996	6/30/2006	$8.00	$10,184.00	$12,094.00	$17.57	No
123	139249	640	25N 101W 35: ALL	7/1/1996	6/30/2006	$12.00	$7,680.00	$6,080.00	$21.62	No
119	139280	308.07	22N 104W 8: E2NE, NW, W2N2 EXCL 11.93 AC RR ROW	7/1/1996	6/30/2006	$2.00	$618.00	$2,935.50	$11.78	No
127	139281	40	23N 104W 34: SWSW	7/1/1996	6/30/2006	$17.00	$680.00	$300.00	$26.38	No
120	139283	320	22N 105W 17: N2	7/1/1996	6/30/2006	$2.00	$640.00	$3,040.00	$11.73	No
128	139389	2224.93	22N 102W 6: S2NE, SENW, E2SW, SE, LOTS 1-7 22N 102W 8: NE, SW 22N 102W 10: ALL 23N 102W 32: ALL	7/1/1996	6/30/2006		$0.00	$17,800.00	$8.03	No
129	139955	40	23N 104W 15: SESE	11/1/1996	10/31/2006		$0.00	$300.00	$9.38	No
130	141153	4893.69	27N 102W 1: S2N2, N2SW, LOTS 1-4 2: S2N2, NESW, SE, LOTS 1-4 3: S2N2, S2, LOTS 1-4 4: S2N2, S2, LOTS 1-4 10: NWNE, SENE, W2, SE 11: SENE, SWNW, S2 12: S2N2, S2 15: ALL 23: ALL	5/1/1997	4/30/2007		$0.00	$36,705.00	$7.52	No
151	141820	1280	26N 102 13: ALL 21: ALL	8/1/1997	none		$0.00	$5,760.00	$4.56	No

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
184	141821	40	25N 103 23: NESE	8/1/1997	none		$0.00	$220.00	$7.38	Segregation
230	141847	6260.56	27N 100W 15: ALL 18: E2SW, SE, LOTS 3 & 4 19: E2W2, E2, LOTS 1-4 20: N2, SW, W2SE, SESE 21: S2N2, S2 22: N2SW, SESW, SE 23: NE, SW, N2SE, SWSE 31: E2NW, NE, LOTS 1 & 2 27N 101W 12: ALL 13: ALL 24: ALL 25: ALL	8/1/1997	none		$0.00	$28,174.50	$4.51	No
148	141850	3042.76	26N 102W 4: S2N2, S2, LOTS 1-4 5: S2N2, SW 8: ALL 9: ALL 10: ALL	8/1/1997	none		$0.00	$13,693.50	$4.53	No
233	144124	640	23N 105W 26: ALL	2/1/1998	none	$7.00	$4,480.00	$2,880.00	$11.62	Segregation
131	144125	428.69	24N 105W 6: E2SW, SE, LOTS 1-6	2/1/1998	1/31/2008	$70.00	$30,030.00	$3,574.00	$78.56	No
133	144652	319.25	23N 102W 1: S2NE, SE, LOTS 1& 2	4/1/1998	3/31/2008	$10.00	$3,200.00	$1,920.00	$16.27	No
134	144653	720	23N 102W 12: E2, SENW, E2SW 14: S2NE, SE 24: NWSW	4/1/1998	3/31/2008	$10.00	$7,200.00	$4,320.00	$16.10	No
164	145001	479.03	25N 102W 7: E2, E2NW, LOTS 1 & 2	2/1/1994	none	$3.00	$1,437.00	$4,795.50	$13.17	Assignment
161	145052	637.67	25N 102W 6: S2NE, SENW, E2SW, SE, LOTS 1-7	2/1/1994	none	$3.00	$1,916.00	$6,380.00	$13.13	Assignment
152	146160	480	26N 102W 19: E2, E2W2	12/1/1985	none		$0.00	$8,000.00	$16.82	Segregation
181	146161	160	25N 103W 15: SE	11/1/1987	none		$0.00	$5,613.35	$35.55	Segregation
30	146162	400	26N 103W 26: NE, NWNW, SW, SESE	2/1/1994	1/31/2004	$2.00	$800.00	$5,400.00	$15.69	Segregation
153	146163	1920	26N 102W 22: ALL 27: ALL 28: ALL	4/1/1994	none	$7.00	$13,440.00	$22,080.00	$18.54	Segregation
178	146164	480.36	25N 103W 2: S2NE, S2, LOTS 1& 2	4/1/1994	none	$42.00	$20,202.00	$4,569.50	$51.72	Segregation

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
179	146165	1440	25N 103W 10: NE, S2 11: ALL 22: W2	4/1/1994	none	$42.00	$60,480.00	$16,560.00	$53.55	Segregation
177	146166	320	25N 102W 33: W2	5/1/1988	none		$0.00	$4,746.67	$15.07	Segregation
183	146167	40	25N 103W 22: NESE	8/1/1997	none		$0.00	$180.00	$6.38	Segregation
52	146176	240	23N 105W 23: NW 29: NWNW 30: NENE	8/1/1994	7/31/2004	$27.00	$6,480.00	$2,760.00	$38.81	Segregation
132	146177	80	23N 105W 27: E2SE	2/1/1998	1/31/2008	$7.00	$560.00	$360.00	$12.44	Segregation
135	146462	2160	27N 103W 23: ALL 24: ALL 25: NW, S2SW, SE 26: NE, N2NW, SENW, SW, NWSE	10/1/1998	9/30/2008	$2.00	$4,320.00	$12,960.00	$8.03	No
136	147242	4197.2	28N 102W 25: N2, SW, N2SE 26: ALL 29: N2, N2SW, SESW, SE 30: E2, E2W2, LOTS 1-4 31: S2NE, E2W2, S2, LOTS 1-4 32: NE, NENW, S2NW, S2 35: N2, SW, N2SE, SWSE	12/1/1998	11/30/2008		$0.00	$18,891.00	$4.52	No
137	147473	566.13	26N 98W 30: E2, SENW, E2SW, LOTS 2-4	2/1/1999	1/31/2009	$2.00	$1,134.00	$2,550.00	$6.64	No
75	147705	1000	24 106W 24: ALL 25: SENE, NWSW, NESE, S2SE 26: SE	4/1/1995	3/31/2005		$0.00	$4,000.00	$4.08	Segregation
111	147706	1684.25	24N 106W 3: LOT 5 &6 4: LOT 5-7 6: LOT 7-9 7: E2NW, LOTS 1 & 2 13: S2NW 17: S2NW 18: N2NE, NENW, LOT1 23: E2 25: NESW, S2SW 35: NE, S2NW, S2	2/1/1996	1/31/2006	$8.00	$13,480.00	$13,482.00	$16.05	Segregation

JMH Lease Information (Continued)

	Lease Serial Number (WYW)	Lease Acres	Lease Description	Lease Effective Date	Lease Expiration Date	Bonus Bid ($/acre)	Lease Bonus Bid Paid	Lease Rental Paid	Paid to Govern-ment ($/acre)	Lease Acre Changes
138	149015	1860.97	22N 106W 1: S2, NW, SW, W2SE, LOTS 8-10 2: S2N2, S2, LOTS 5-12 11: ALL	10/1/1999	9/30/2009	$10.00	$18,610.00	$5,584.00	$13.04	No
139	149024	1429.04	23N 106W 22: W2W2 28: ALL 31: E2, E2W2, LOTS 104	10/1/1999	9/30/2009	$6.00	$8,580.00	$4,290.00	$9.06	No
140	150044	1268.45	25N 105W 2: LOTS 3 & 4 3: S2N2, SW, LOTS 1-4 4: S2NE, SE, LOTS 1-4 10: W2	4/1/2000	3/31/2010	$13.00	$16,497.00	$3,808.00	$16.07	No
141	150859	160	25N 99W 32: N2S2	8/1/2000	7/31/2010	$16.00	$2,560.00	$480.00	$19.47	No
142	151788	1160	23N 100W 5: S2SW, SWSE 8: ALL 10: SESE 11: S2S2 12: S2S2, NESE	12/1/2000	11/30/2010	$8.00	$9,280.00	$1,740.00	$9.56	No
		230,693.34					$2,347,749.00	$2,612,316.06		

APPENDIX 17—IMPLEMENTATION, MONITORING, AND EVALUATION PROCESS

Proposed changes in the Bureau of Land Management (BLM) management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) planning area. As a result of this review, the implementation strategy has been modified to include a more traditional monitoring and adjustment approach.

The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of oil and gas lessees. Adaptive management, as it relates to timing and sequencing of the development of existing oil and gas leases, and future oil and gas leasing, has been dropped from consideration. A more traditional approach (where many of the decisions are made up front and would require plan modification to change) has been adopted in the JMH CAP. Some flexibility is maintained where possible for the other resources, and field data still plays an important role in impact analysis and in measuring progress toward the various goals. Timing and sequencing of resource activities other than oil and gas leasing and development will be used where appropriate and required to attain the management vision.

This appendix provides detail on the revised resource management strategy to be used in the JMH CAP planning area. The appendix discusses how the various surface use activities and their interactions with other planning area resources will be addressed. Greater detail is provided for oil and gas exploration and development activities because these are the most foreseeable resource use and are anticipated to have the greatest immediate impact. Data collected in the planning area will be used to support decision changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the goals adopted for the planning area.

MANAGEMENT VISION

In general, resource management in the JMH CAP planning area will allow multiple use activities and sustained yield while minimizing undesirable impacts or enhancing certain identified aspects of the area. All types of surface activities are anticipated, including oil and gas exploration and development, recreational use, livestock grazing, rangeland improvement, rights-of-way, solid mineral exploration and development, and alternative energy production. In addition, the area will continue to be recognized for its ability to support big game and other wildlife. Important historical and cultural resources will be identified and managed for future study and enjoyment. Special management areas (such as Wilderness Study Areas [WSA] and Areas of Critical Environmental Concern [ACEC]) will continue to safeguard the unique values within the planning area. The public will be kept informed of the activities, impacts, and decisions concerning the JMH CAP and will be provided opportunities for feedback and comment. Local, tribal, state, and federal governments will be involved in the realization of the vision.

SUPPORTING RESOURCE OBJECTIVES

Numerous resources will be managed in the JMH CAP planning area. Each has individual objectives that support the overall management vision. The administration of the various resources is an important component in the total JMH CAP management strategy. Properly combined, the objectives for managing the resources listed below will result in the multiple use management vision being achieved.

- **Land and Water Resources Management:** To maintain or enhance land and water resources using ecological principles and science-based performance criteria.

- **Fire Management:** To use prescribed fire as a management tool to help meet multiple use resource management goals and to provide cost-effective protection from wildfire to life, property, and resource values.

- **Watershed Management:** To stabilize and conserve soils; increase vegetative production; maintain or improve surface and ground water quality; and protect, maintain, or improve wetlands, floodplains, and riparian areas.

- **Wild Horses Management:** To protect, maintain, and control viable, healthy herds of wild horses at Appropriate Management Levels (AML) in the Great Divide Herd Management Area (GDHMA) while retaining their free-roaming nature; provide adequate habitat for free-roaming wild horses through management consistent with principles of multiple use and environmental protection; and provide opportunity for the public to view wild horses.

- **Livestock Grazing Management:** To improve forage production and ecological conditions for the benefit of livestock use while providing for other resource values.

- **Vegetation Management**: To maintain or enhance vegetation community health, composition, and diversity to meet watershed, wild horse, wildlife, and livestock grazing resource management objectives and to provide for plant diversity (desired plant communities).

- **Wildlife Habitat Management:** To maintain, improve, or enhance the biological diversity of wildlife species while ensuring healthy ecosystems; restore disturbed or altered habitat, with the objective of attaining desired native plant communities, while providing for wildlife needs and soil stability: and to the extent possible, suitable wildlife habitat and forage would be provided to support the Wyoming Game and Fish Department (WGFD) strategic plan population objectives.

- **Heritage Resources Management:** To expand the opportunities for scientific study, and educational and interpretive uses of cultural and paleontological resources; protect and preserve important cultural and paleontological resources and/or their historic record for future generations; resolve conflicts between cultural/paleontological resources and other resource uses; and foster opportunities for Native Americans to use heritage resources.

- **Travel, Access, and Realty Management:** To manage the public lands to support the goals and objectives of other resource programs, respond to public demand for land use authorizations, and acquire administrative and public access where necessary.

- **Recreation Resources Management:** To ensure the continued availability of outdoor recreational opportunities sought by the public while providing for other resource values, meet legal requirements for the health and safety of visitors, and reduce conflicts between recreation and other types of resource uses.

- **Mineral and Energy Resources Management:** To maintain or enhance opportunities for mineral exploration and development while providing for other resource values.

- **Visual Resources Management:** To maintain or improve scenic values and visual quality and to establish priorities for managing the visual resources in conjunction with other resource values.

- **Special Management Areas Management:** To maintain or enhance the resource values and characteristics for which the area was designated as a special management area.

In the case of competing resource objectives, the one providing the greatest assistance to achieving the management vision will be chosen. Attempts will be made to meet all resource objectives to the greatest extent possible to maximize the combined outcome.

General Approach

The vision and objectives are best achieved through adjusting to the planning area resource conditions and user demand. Many types of surface-disturbing or disruptive activities are expected throughout the planning area. Grazing, recreation, rangeland improvement, rights-of-way, and minerals extraction will be allowed as long as the activity conforms to the land-use classification. For example, WSA management will follow prescriptions established by law and regulation, and ACEC management (Chapter 2) will safeguard those values being recognized with the ACEC designation. Outside the special designation areas, use restrictions will be employed to control impacts where and when necessary. The amount of activity allowed at any specific location in the planning area naturally depends on, among other factors, the type of associated surface disturbance, activity impact on other resources, conditions in the planning area, and alignment of the activity with the resource management objectives.

The adopted approach recognizes valid rights (such as oil and gas leases) and needs (such as grazing) involving public lands as well as the need to maintain or enhance the natural values in the planning area. To this end, the planning area is divided into three regions that represent the relative importance of the contained resource values. Surface disturbing or disruptive activities will be tightly controlled where the most overlapping sensitive values are located. The planning area division allows differing policies or practices to be adopted, their effectiveness judged, and needed changes made to increase their effectiveness in achieving the resource objectives and the management vision.

Determining the effectiveness of practices or polices requires information. Therefore, data collection is part of the JMH CAP management strategy. In addition, the data is necessary to assess the condition and level of use of the various resources to allow for better decision-making. The measurements and observations will provide information for numerous tasks, including impact analysis, project or proposal evaluation, and development of the most effective mitigation measures. Data collection and its use are fully discussed below.

BLM will act in concert with state, tribal, and local governments. Though BLM remains the final decision maker on the use of public lands, the varied viewpoints represented by a diverse group of users will help to develop and maintain an appropriate management approach. Outside agencies will be called upon as necessary for their particular expertise in data analysis and resource knowledge. To aide BLM in the management of the planning area, a JMH CAP Working Group will be formed. This non-Federal Advisory Committee Act (FACA) chartered group will act in an advisory capacity and provide better access to outside sources of data or expertise. The public will also have a role in the management of the planning area. See the Communication and Participation section of this appendix for further detail on the JMH CAP Working Group and BLM plans to disseminate planning area information and use feedback.

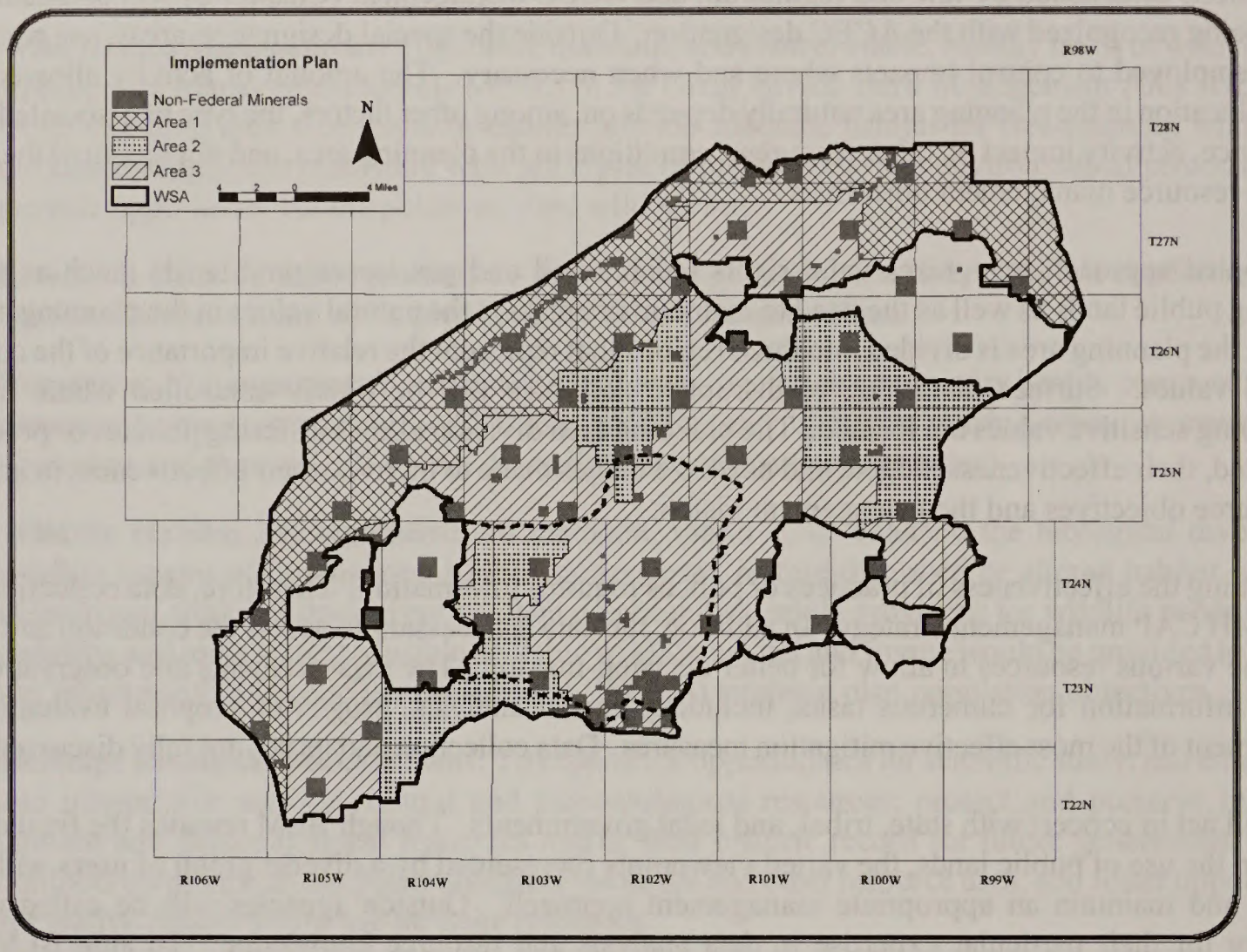
JMH CAP Decisions

Several ways exist for achieving the multiple use management vision. The methodology selected implements a careful approach to the development and use of the various resources (especially oil and gas) while managing the associated impacts. Observing actual effects of surface-disturbing and disruptive activities is a necessary part of the approach. Limits, targets, or thresholds presented in the final EIS may be modified as information is collected, decision effectiveness is evaluated, and needed modifications are made to associated policies or practices. It is equally possible that both less or more restrictive measures could be implemented as a result of observing the effects of the management strategy.

Figure A17-1 presents the three areas of relative resource value within the planning area. Area 1, Area 2, and Area 3 have been identified to guide management analysis and decisions. The distinction between the areas is a "broad-brush" approach that combines many factors (e.g., wildlife usage, presence of crucial habitat, plant

species distribution, historic or cultural importance, and general sensitivity to the impact of surface activities) into a single quantity. The area designations provide a general guide to reviewing proposed surface use activities in the planning area. For example, Area 3 has the highest relative ranking and so proposed surface use activities located here will be subject to the most stringent mitigation.

Figure A17-1. Areas of Resource Value Within Planning Area



Oil and gas, by necessity, is a special case. Because of past leasing decisions, many valid rights exist in the form of existing oil and gas leases in the planning area. The primary control BLM maintains over the development of the leased oil and gas resources is through further leasing decisions. (Other controls such as short-term lease suspension, access, APD condition-of-approval, and lease stipulations are meant to mitigate impacts, but these do not, to a large extent, control when and where exploration and development activities take place.) Decisions specific to oil and gas are designed to minimize and attempt to control the anticipated impacts in each of the three areas.

In Area 1 the suspensions on existing oil and gas leases will be lifted 3 years from the signing of the Record of Decision (ROD) or upon the signing of an approved plan of development. New leasing will be considered in Area 1 immediately following the signing of the ROD. Leasing requests will originate from industry as provided for by the Mineral Leasing Act of 1920, as amended and supplemented (30 United States Code [U.S.C.] 181 et seq.). It is expected that exploration and development will occur within the term of the lease and that any resulting impacts related to exploration/development/production will be considered during the analysis of future leasing actions. Review of exploration, development, and leasing proposals will continue to use the current process (see Appendix 14 or contact the Wyoming BLM State Office for current information on permitting oil and gas activities) and will employ collected data, impact observations, and knowledge gained from similar activities in the planning area in the review process. Application of appropriate lease stipulations will be used to address any identified impact issues. Access for pipelines,

power lines, and roads, location of facilities, and other related surface activities will undergo similar scrutiny. Other uses (such as recreation, grazing, and rangeland improvement) will employ resource-specific review processes and will also rely heavily on field data and observations to make informed decisions. Stipulations, restrictions, and modifications to proposals will be used to manage impacts of any surface disturbing or disruptive activities.

Area 2 existing oil and gas leases will have their suspensions lifted 3 years from the signing of the ROD or upon the signing of an approved plan of development, the same as Area 1. New leasing will be considered immediately upon signing of the ROD. BLM may require potential lessees to share data (such as reservoir data or geologic data) or plans related to the development of the potential oil and gas resource prior to leasing. The information will be used to ensure that impacts resulting from development of the Area 2 area of interest would remain within the acceptable level of impacts analyzed in this document. Consideration of leasing may rely heavily on field data, the condition of the planning area resources as determined through monitoring of sensitive resource indicators, the understanding of the associated impacts, and other pertinent information available. Future impacts resulting from the development of the lease interest area in conjunction with other foreseeable surface uses will also be considered. Fluid mineral resource development and protection of surface resource values will be attained through lease stipulations and/or site-specific conditions of approval. Due to the greater number of sensitive resource values in Area 2, it is anticipated that use authorizations for activities such as range improvements, recreation permits, rights-of-way, and well permits would have an increased number of resources and issues to analyze at the permitting stage. As with other projects in Area 1, appropriate administrative controls (such as conditions-of-approval, use restrictions, and requiring mitigation measures) will be used to safeguard or support improvement of resource values.

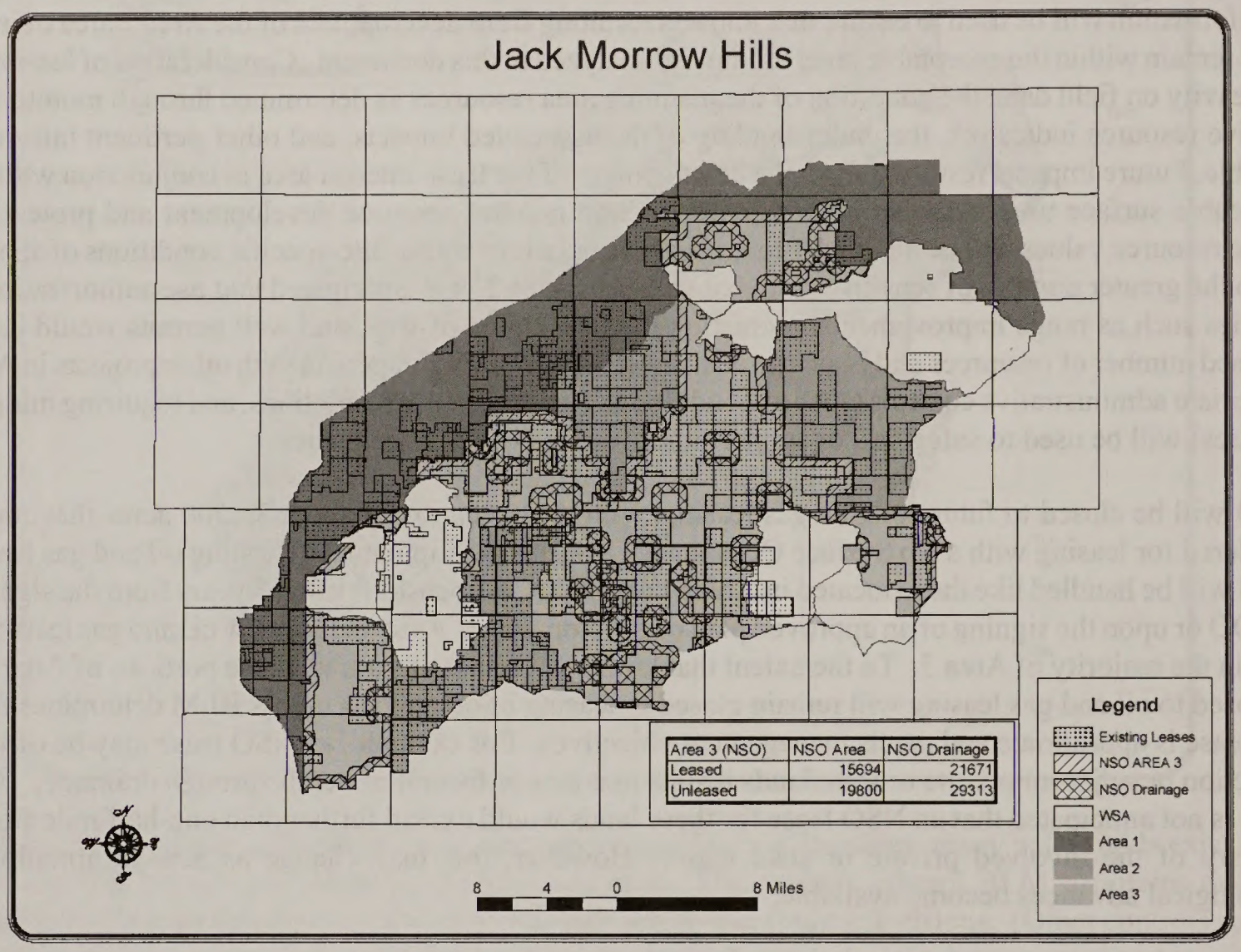
Area 3 will be closed to future oil and gas leasing, with the exception of about 35,500 acres that could be considered for leasing with a No Surface Occupancy (NSO) lease stipulation. Existing oil and gas leases in Area 3 will be handled like those located in Areas 1 and 2 (i.e., suspensions lifted 3 years from the signing of the ROD or upon the signing of an approved plan of development). As stated, no new oil and gas leasing will occur in the majority of Area 3. To the extent that laws and regulations allow, those portions of Area 3 that are closed to oil and gas leasing will remain closed to leasing of oil and gas unless BLM determines that an NSO lease is appropriate and meets management objectives. For example, an NSO lease may be offered if production on adjacent private or state lands results in a loss of federal minerals through drainage. At this time it is not anticipated that an NSO lease for these lands would extend further than one-half mile from the boundary of the involved private or state lease. However, this may change as new information and technological advances become available.

Because Area 3 contains a high concentration of sensitive resource values, proposals for all surface activity (for oil and gas activities this is limited to the existing leases) will be closely examined. Users requiring approval are charged with showing that resource development activities will result in acceptable impacts and are needed. This action may mean proposing novel methods, systems, and technologies for BLM consideration. APDs and other use approvals may require numerous revisions and have stringent conditions-of-approval to address specific issues related to impacts. Rights-of-way applications will be examined for necessity. Paralleling, consolidation, or rerouting may be necessary to minimize cumulative surface disturbance and to meet transportation planning objectives. Other surface use proposals and projects in Area 3 (e.g., rangeland improvement, grazing, access, and recreation) can expect to undergo an in-depth, comprehensive review. Field data and observations, cumulative impacts of likely and foreseeable competing uses, understanding of impacts, conditions within the planning area, and management goals will be employed during the decision-making process.

As previously discussed, Area 3 contains a special category for possible oil and gas leasing. The lands surrounding private or state oil and gas leases and those along the perimeter not bounded by a WSA or adjacent to particularly sensitive resources will be considered for leasing with an NSO stipulation. This

provides opportunities (such as by the use of directional drilling) to recover oil and gas within Area 3 from locations outside the planning area or within Areas 1 and 2 without significantly impacting Area 3 resource values. Approximately 35,500 acres would be available within Area 3 for future oil and gas leasing with the NSO stipulation (based on a one-half mile perimeter). Approximately 15,694 acres of the perimeter area is currently leased. These existing leases are subject to a variety of stipulations and are not necessarily constrained by an NSO restriction. Figure A17-2 shows the existing leases and illustrates the possible effects of one-half mile NSO leases along the entire Area 3 and private lands perimeter.

Figure A17-2. Possible NSO Oil and Gas Leasing Areas



Approval of any surface disturbing or disruptive activity anywhere in the planning area will be considered on a case-by-case basis. The analysis will consider many factors such as type and effect of future uses, surface resource impacts and recovery, planning area condition as shown by the indicator data, operational and environmental justification and potential for effective impact mitigation. The proposal review process can be expected to take longer and be more intensive when sensitive values are involved.

Wherever sensitive values exist, and particularly in Areas 2 and 3, mitigation measures commensurate with the anticipated impacts, the resource values of the area, and the degree of public concern may be considered during the review and approval process. For oil and gas projects, mitigation actions could include surface disturbance conditional requirements (Table 2-2), transportation planning before initiating any activity with the objective of managing travel in areas of crucial access, remote control and monitoring of fluid mineral production facilities to limit travel, multiple-well pads to limit surface disturbances, limiting number of pads per section in sensitive areas, use of directional drilling to minimize disturbance of sensitive areas, clustering or centrally locating ancillary facilities, shrub reclamation (e.g., containerized stock, transplanting) to restore, rehabilitate or replace habitat, application of geotechnical material for construction, and potential unitization

prior to exploration and development. Other resource projects or proposals can expect a similar in-depth consideration of mitigation measures to safeguard the affected resource values.

Oil and gas leases that expire, terminate, or in any other way return to an "unleased" status will be considered for future leasing consistent with this plan based on location. In other words, if an oil and gas lease expires in Area 3, the lands will not be considered for new oil and gas leasing within the life of the JMH CAP unless the lands fall into the special NSO lease categories as previously described.

BLM will consider requests for oil and gas lease suspensions on a case-by-case basis. Decisions to grant or deny such a request will be based upon many factors, including current regulations and Wyoming BLM policy, conditions in the planning area, and alignment with management goals.

Because of the uncertainty associated with the oil and gas resources within the planning area, the exact timing or sequence of development of this resource is not known. The implementation strategy provides the opportunity for lessees to exercise their rights within reason and consistent with the limits imposed by the JMH CAP. The sensitive nature of portions of the planning area requires a higher level of control over any surface disturbances. As stated throughout this section, projects and proposals within the planning area will be considered based on, among other factors, current and future surface uses, condition of the planning area, industry initiative in addressing impacts, effectiveness of mitigation measures, and management goals. Data will be used to evaluate and support the decisions, and increase impact understanding, prediction and mitigation.

DATA COLLECTION

Monitoring of the planning area is necessary for the implementation strategy. The constantly changing resource conditions create a challenge to management. Field data and observations will help make decisions better by—

1. Measuring factors that indicate the condition of the planning area.
2. Increasing understanding of impacts by direct observation.
3. Increasing the effectiveness of project analysis by employing actual data.
4. Aiding establishment of thresholds, trigger-points or limits specifically for the planning area.
5. Evaluating the progress toward management goals.
6. Helping develop effective and appropriate mitigation measures.
7. Providing information on the success of management practices and policies.

Early in the development of the JMH CAP, a long list of indicators was developed with the aid of the Cooperating Agencies. These were culled into a manageable number by considering data source, usefulness, quality, and quantity. The effort resulted in the resource indicators presented in Table A17-1. Note that numerous resources have common indicators, resulting from the complex, interrelated nature of the planning area. Effects of surface usage overlap and combine making it challenging to identify reactions (advantageous and disadvantageous) that merit attention to either correct a problem or benefit from an opportunity.

Table A17-1. Resource Management Indicators

Resource	Indicator
Land and Water	
Water	Standards for Healthy Rangelands; surface disturbance and disruptive activity; changes in stability of dunes; roads and trails creation; road density
Wildlife	Standards for Healthy Rangelands; elk distribution; elk population; mule deer distribution; mule deer population; pronghorn distribution; pronghorn population; lek use; sage-grouse population; surface disturbance and disruptive activity; roads and trails creation; road density
Fire	Standards for Healthy Rangelands
Livestock Grazing	Standards for Healthy Rangelands; livestock AUMs; surface disturbance and disruptive activity; roads and trails creation; road density
Wild Horses	Standards for Healthy Rangelands; wild horse AML; surface disturbance and disruptive activity; roads and trails creation; road density
Heritage	Heritage resources; Native American concerns; surface disturbance and disruptive activity; roads and trails creation; road density
Recreation	Recreation use; surface disturbance and disruptive activity; roads and trails creation; road density
Mineral and Alternative Energy	O/G leased; O/G available for leasing; O/G production; locatable mineral activity; salable mineral activity; surface disturbance and disruptive activity; roads and trails creation; road density
Visual	Visual resource management (VRM) classifications; surface disturbance and disruptive activity; roads and trails creation; road density
Special Management Areas (SMA)	Any of previous indicators as they apply to the specific SMA
Travel, Access, and Realty	No specific indicators were developed because travel, access, and realty is a support function

Table A17-2 presents more detailed information about the indicators presented in Table A17-1. From this table it is seen that BLM routinely gathers much of the desired indicator data as part of its normal monitoring and oversight duties. If additional BLM monies or manpower are required to support the developed monitoring plan, other solutions will be sought before resorting to a budgetary resolution. If it is impossible to gather all the indicator data as scheduled, a priority list will be developed and resources assigned accordingly. Management actions and surface use proposals will be analyzed using all available information. The result of inadequate support for the monitoring strategy will be continuation of the decisions resulting from the JMH CAP assumptions with only minor, conservative modifications.

The JMH CAP management strategy also depends on data collected by other agencies. This reliance reduces the need for BLM resources (money and manpower) to monitor the effects of surface activities in the planning area. However, there is no guarantee that the quality, quantity, and availability of data will exist for the life of the JMH CAP. Already, reviews of the non-BLM information have revealed problems with a few of the statistics, methods of collection, and collection frequency. These and other issues require resolution as the monitoring strategy is implemented, but do not present insurmountable problems.

Table A17-2. Indicator Detail

Indicator	Source of Information	Measurement Location	Methodology/ Data Source	Information Indicator Provides
Elk distribution[1]	BLM	Planning area	GIS collar study; field observations	Integrity of key habitats and migratory corridors (amount of continuous land between important habitats travel pathways between key habitats)
Elk herd health[1]	WGFD	Herd unit area	Post-season counts; flight counts; other WGFD data	Population, health and security of herd
Mule deer distribution[1]	WGFD	Herd unit area	Flight counts; other WGFD data; field observations	Integrity of key habitats and migratory corridors (amount of continuous land between important habitats)
Mule deer herd health[1]	WGFD	Herd unit area	Post-season counts; flight counts; other WGFD data	Population, health, and security of herd
Pronghorn distribution[1]	WGFD	Planning area	Radio collar studies; field observations	Integrity of key habitats and migratory corridors (amount of continuous land between important habitats)
Pronghorn herd health[1]	WGFD	Planning area	Preseason counts; flight counts; other WGFD data	Population, health, and security of herd
Sage-grouse lek use[1]	BLM; WGFD	Planning area	Field observation; lek counts	Health and security of population; reproduction opportunities
Sage-grouse population health[1]	BLM; WGFD	Planning area	Preseason counts; field observation	Population changes
Livestock AUMs	BLM	Planning area	Counts; actual use reports; grazing authorizations	Amount of livestock use (+/-)
Wild Horse Population	BLM	Great Divide Basin HMA	Counts	Number of wild horses (+/- AML)
Standards for Healthy Rangelands— Standard #1[2]	BLM	Watersheds Grazing Allotments	Remote sensing[3]; field visits	Change in rangeland and watershed health (+/-)
Standards for Healthy Rangelands — Standard #2[2]	BLM	Watersheds Grazing Allotments	Remote sensing[3]; field visits; trend data collection	Change in rangeland and watershed health (+/-)
Standards for Healthy Rangelands — Standard #3[2]	BLM	Watersheds Grazing Allotments	Remote sensing[3]; field visits; trend data collection	Change in rangeland and watershed health (+/-)
Standards for Healthy Rangelands — Standard #4[2]	BLM	Watersheds Grazing Allotments	Field visits	Change in rangeland and watershed health (+/-)

Table A17-2. Indicator Detail (Continued)

Indicator	Source of Information	Measurement Location	Methodology/ Data Source	Information Indicator Provides
Standards for Healthy Rangelands — Standard #5[2]	BLM and State of Wyoming Department of Environ-mental Quality (DEQ)	Watersheds Grazing Allotments	Monitoring station and visual monitoring data	Change in rangeland and watershed health (+/-)
Standards for Healthy Rangelands — Standard #6[2]	BLM and State of Wyoming DEQ	Watersheds Grazing Allotments	Monitoring station and visual monitoring data	Change in rangeland and watershed health (+/-)
Roads and trails creation	BLM; County	Planning area and associated hydrologic unit code (HUC) 12 watersheds	Remote sensing[2]; permits	Change watershed health (+/-), habitat fragmentation, migratory corridor integrity (amount of continuous land between important habitats)
Road density	BLM; County	Planning area and associated HUC12	Remote sensing[3]	Change watershed health (+/-), habitat fragmentation, migratory corridor integrity (amount of continuous land between important habitats)
Changes in stability of dunes	BLM	Planning area	Remote sensing[2]; field visits	Habitat loss/gain, watershed health, habitat use/fragmentation/expan sion, soil stability
O/G leased	BLM	Planning area	LR2000 database, management decisions	Leasing activity; opportunity taken for development
O/G available for leasing	BLM	Planning area	Management decisions; industry interest	Interest in leasing; opportunity for development
O/G production	BLM; Wyoming Oil & Gas Conservation Commission (WOGCC)	Planning area	LR2000; WOGCC database	Lease activity (+/-); resource potential
Locatable mineral activity	BLM	Planning area	LR 2000 database	Opportunity for locatable mineral activity; interest in locatable minerals
Salable mineral activity	BLM	Planning area	Permits; LR 2000	Opportunity for salable mineral activity; interest in salable minerals

Table A17-2. Indicator Detail (Continued)

Indicator	Source of Information	Measurement Location	Methodology/ Data Source	Information Indicator Provides
Surface disturbance and disruptive activity	BLM	Planning area	Remote sensing[3]; field visits; traffic counts; permits	Change in erosion potential, habitat fragmentation/integrity, migratory corridor integrity (amount of continuous land between important habitats), soil stability, watershed health
VRM Classifications	BLM	Planning area	BLM VRM handbook; mitigation	Change in visual quality (+/-)
Recreation use	BLM; WGFD	Planning area	Surveys; traffic/visitor counts; field visits; public comment; ROS	Amount of visitors, activity and type of use, location of use (when, where).
Heritage Resources	BLM; Activity Proponents	Planning area	Cultural Resource Inventory; public comment	Whether any unusual or unanticipated resources are located compared to known data about planning area
Native American Concerns	BLM; Native American Sources; Activity Proponents	Planning area	Native American Consultation; public comment	Whether any unusual or unanticipated resources are located compared to known data about planning area

[1]Weather severity indicators will be used in the analysis of data collected on wildlife populations and health.

[2]Each of the six rangeland standards contains specific indicators (USDI, Bureau of Land Management, Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming, August 12, 1997). See Appendix 10, Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management.

[3]Remote sensing data includes aerial and satellite imagery.

Consideration will be given to those occurrences outside BLM's control such as environment (weather, drought), outside agency jurisdiction and laws, socioeconomics (politics, local economics, level of interest), topography and lay of the land, location of heritage resources (site specific), location of mineral resources, and technology.

Because of the complexity of the situation, other information may be required to complement that collected in the field. There are many public sources of data and analyses, including professional journals, publications, and research reports. These are not listed in the table but it is understood the "Source of Information" column is not all inclusive. Awareness of supplemental measures and their sources is the responsibility of the involved resource specialists.

Circumstances may arise that prompt a review of an indicator. Such actions as extensively seeking data outside the chosen sources could suggest a problem. Adding, removing, or modifying the resource indicators could address deficiencies or opportunities discovered later. Developing technologies or a better understanding of actual resource interactions may also result in changes to indicator composition or their measures. Evaluating the validity of data and its continued usefulness is part of the management strategy.

Table A17-3 contains information on the measures used for the resource indicators. Of particular interest is the column listing preliminary performance standards (see the columns under "Measure and Trigger"). These numbers are based on the resource specialist's best understanding and data available at present. Most, if not

all, are educated assumptions that the JMH CAP management strategy intends to test and refine through observation and analysis of the indicator data. However, until completion of this task, the triggers provided in Table A17-3 will be used to guide management decisions. The upper and/or lower values are limitations that are not intended to be violated. Action will be taken before an indicator reaches a trigger point since operating outside these bounds indicates a failure of the management strategy. In such a case, it may be necessary to review the JMH CAP to determine if immediate action is required to correct the situation. It is a goal of the strategy to manage the planning area within a set of appropriate limits. Again, the values shown in Table A17-3 are a "first cut" at triggers that might be later refined to better fit the planning area.

Table A17-3. Measurement Detail

Indicator	Measure and Trigger			Unit	Frequency
Elk distribution		**Lower**[1]	**Upper**[1]		Minimum of 4 times daily for first year (3/03–3/04); additional funding to be pursued for life of plan
	Animal distribution	[2]	[2]	Location	
	Habitat use		-15%	Acres	
	Movement	[2]	[2]	Location	
Elk herd health	Total	[2]	-15%		At a minimum biennially; additional funding to be pursued to increase frequency to yearly
	Calf/cow ratio	[2]	40	Number Calves/100 Cows	
Mule deer distribution	Animal distribution	[2]	[2]	Location	Dependent on securing sufficient funding for GPS collaring
	Habitat use		-15%	Acres	
	Movement	[2]	[2]	Location	
Mule deer herd health	Total	[2]	-15%		At a minimum biennially; additional funding to be pursued annually
	Fawn/doe ratio	[2]	60	Number Fawns/100 does	
Pronghorn distribution	Animal distribution	[2]	[2]	Location	Dependent on securing sufficient funding for radio collaring
	Habitat use		-15%	Acres	
	Movement	[2]	[2]	Location	
Pronghorn herd health	Total	[2]	-15%		At a minimum biennially; additional funding to be pursued annually
	Fawn/doe ratio	[2]	70	Number Fawns/100 does	
Sage-grouse lek use	Presence/absence	[2]	[2]	Males on leks	Annually
	Population trend			Wing barrels	
	Active/inactive			Number	
Sage-grouse population health	Bird distribution	[2]	[2]	Location	Annually
	Habitat use		-15%	Acres	
	Movement	[2]	[2]	Location	
Livestock Animal Unit Months (AUM)	AUMs used		26,830	AUM	Annually
Wild Horse Population	Total population	415	600	Animals	Biennially
Standards for Healthy Rangelands—Standard #1[3]	Refer to BLM TR-1730 and TR-1734 Series[4]				On a continuing basis

Table A17-3. Measurement Detail (Continued)

Indicator	Measure and Trigger	Lower[1]	Upper[1]	Unit	Frequency
Standards for Healthy Rangelands—Standard #2[3]	Refer to BLM TR-1730, TR-1734, and TR-1737 Series[4]				On a continuing basis
Standards for Healthy Rangelands—Standard #3[3]	Refer to BLM TR-1730 and TR-1734 Series[4]				On a continuing basis
Standards for Healthy Rangelands—Standard #4[3]	Refer to BLM TR-1730 and TR-1734 Series[4]				On a continuing basis
Standards for Healthy Rangelands—Standard #5[3]	Refer to BLM TR-1730 and TR-1734 Series[4]				As needed on site-specific basis
Standards for Healthy Rangelands—Standard #6[3]	Refer to BLM TR-1730 and TR-1734 Series[4]				As needed on site-specific basis
Roads and trails creation	Location Miles of new road Miles of new trail Miles of improved road Number of roads Number of trails Type of roads	5	5		Annually
Road density	Location Number of roads Acreage of roads reclaimed Number of trails Acreage of tails reclaimed	5	5		Annually
Changes in stability of dunes	Acreage of dunes Boundary	-244 5	1,218 5	Acres in open play area	Annually
O/G leased	Acres leased Acres of suspended leases	5	5		Ongoing basis; annually
O/G available for leasing	Acres open to leasing	5	5		Ongoing basis; annually
O/G production	Number of wells Number of APDs approved MMCF or BBLS production		175 / 40[6] 175 / 40[6] 5	Wells Number	Ongoing basis

Table A17-3. Measurement Detail (Continued)

Indicator	Measure and Trigger			Unit	Frequency
Locatable mineral activity	Acreage withdrawn Number of mining claims Acres available for location	[5]	[5]		Ongoing basis
Salable mineral activity	Acreage open Number of active operations	[5]	[5]		Ongoing basis
Surface disturbance and disruptive activity	Visual indicators of surface disturbance and reclamation success Levels and location of activity	[5]	[5]		Annually
VRM Classifications	Acreage of classification		0% 10% 30%	Class I ac.[7] Class II ac.[7] Class III ac.[7]	Annually
Recreation use	Number and location of users and vehicles Type of use Periods of use	[5]	[5]		On a continuing basis reported annually
Heritage Resources	Prehistoric and/or historic resource number Kind/type Density	[8]	[8]		Per project; on a continuing basis
Native American Concerns	Respected places, TCP or sacred site number Kind/type Density	[8]	[8]		Per project; on a continuing basis

[1]Preliminiary estimates. Lower and upper values will be validated using data collected in the planning area. Revision of the numbers shown in the table is possible.

[2]No quantitative measure is currently applicable. The experience of the resource specialist is used in determining if the related observations are within acceptable bounds until numbers can be confidently assigned to the upper and lower bounds.

[3]Each of the six rangeland standards contains specific indicators (USDI, Bureau of Land Management, Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming, August 12, 1997). See Appendix 10, Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management.

[4]Available at http://www.blm.gov/nstc/library/techref.htm.

[5]Data from these indicators do not alone trigger an action but are required in determining the cause behind changes in other indicators that might require action.

[6]The first number indicates total deep wells and the second is the number of coal bed gas wells.

[7]Refer to Proposed JHM CAP column in Table 4-1.

[8]Every discovery of cultural or historical importance causes a reevaluation of the surface use in the area of the discovery.

Consideration will be given to those occurrences outside BLM's control such as environment (weather, drought), outside agency jurisdiction/laws, socioeconomics (politics, local economics, level of interest), topography/lay of the land, location of heritage resources (site specific), location of mineral resources, and technology.

Besides collecting indicator data, BLM is responsible for summarizing and analyzing all the information and observations; including that gathered by other agencies. The assistance of the JMH working group and outside agencies might be called upon to help with proper interpretation or with particularly difficult analyses. Most resource areas listed in Table A17-1 have guidelines for the collection and analysis activities developed specifically for those resources. However for resource areas that do not have data standards and the need for such is recognized, guidelines will be developed. Following standards in the collection and analysis of field data promotes confidence in the resulting decisions or actions.

JMH CAP Management Process

The process described in this section drives the decisions concerning resource use in the planning area. All proposals or projects that result in surface disturbance or disruption will be affected.

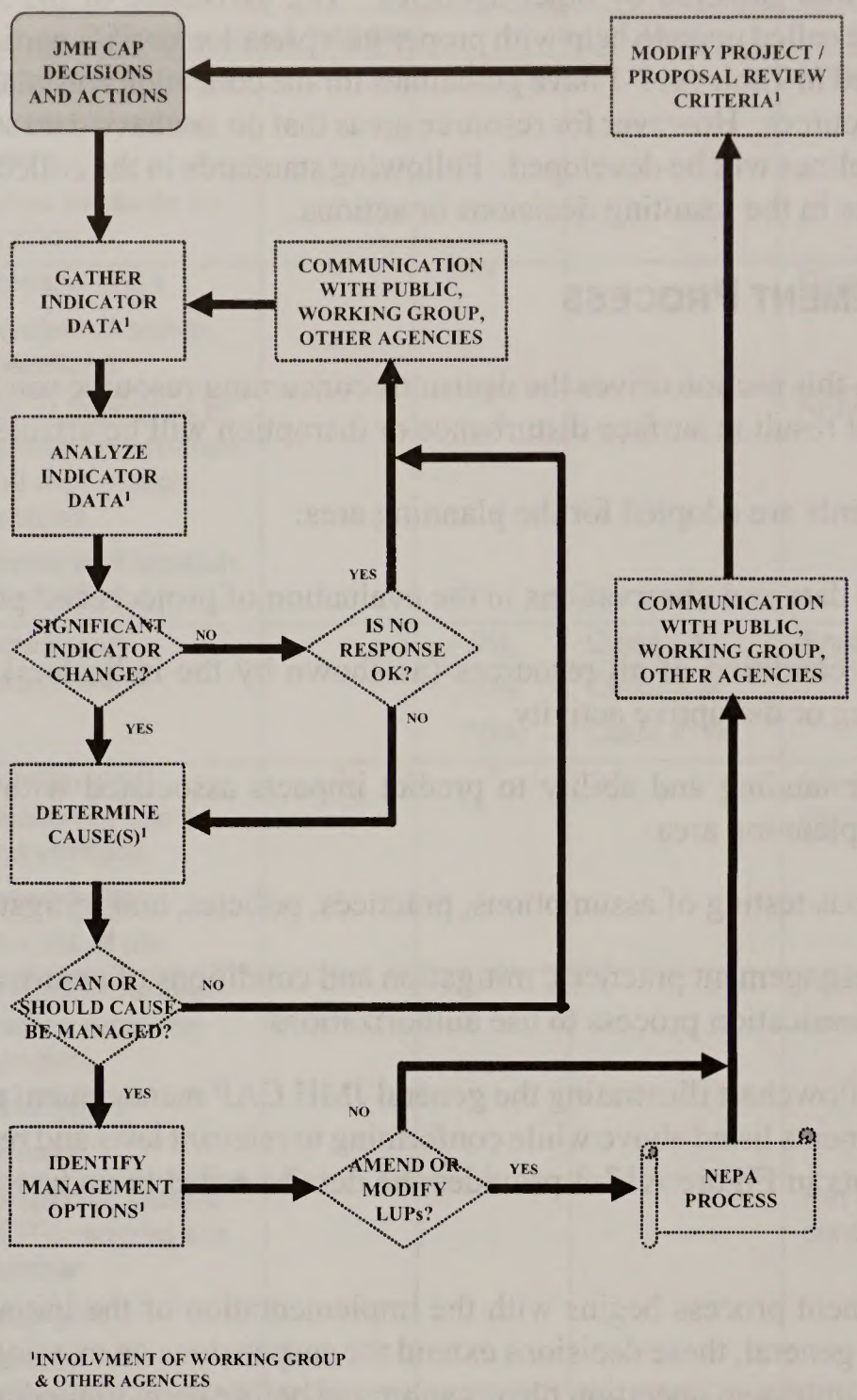
The following key elements are adopted for the planning area:

- Employing field data and observations in the evaluation of projects and proposals
- Considering the condition of all resources (as shown by the indicators) before allowing further surface disturbing or disruptive activity
- Improving understanding and ability to predict impacts associated with the uses of the various resources in the planning area
- Allowing judicious testing of assumptions, practices, policies, and mitigation measures.
- Applying best management practices, mitigation and conditions of approval developed through the monitoring and evaluation process to use authorizations.

Figure A17-3 presents a flowchart illustrating the general JMH CAP management process. It is designed to take advantage of the elements listed above while conforming to relevant laws and regulations. The following discussion of the elements in Figure A17-3 provides the detail needed to understand and work within the process.

The JMH CAP management process begins with the implementation of the initial management decisions previously described. In general, these decisions extend the suspensions on existing oil and gas leases in the planning area for 3 years unless an operation plan is approved before then, immediately opens Areas 1 and 2 to consideration of new oil and gas leasing, and closes Area 3 to further oil and gas leasing except as provided for by specific criteria. Wherever sensitive values exist, and particularly in Areas 2 and 3, other surface use activities will be evaluated based on the anticipated impacts and the resource values of the area during the review and approval process. All resulting actions, decisions, or changes in the analysis and decisions on projects or proposals published in the final EIS and ROD become part of the aggregate that makes up the "JMH CAP Decisions and Actions" box shown in the top left corner of the figure.

Figure A17-3. JMH CAP Management Process



The next box down represents the collection of the indicator data. Detail on the collection of indicator data was previously discussed and shown in Tables A17-2 and A17-3. Note again that there may be modifications to the indicators as a result of data analysis and experience gained from managing the various resources.

Data analysis is the next step shown in the figure. This can be exceedingly complex because of the data type, quantity, and quality. After the data is collected, comparison is made to the existing limits, the JMH CAP assumptions, or as a last resort, the resource specialist expectations. Summary values (such as average or standard deviation) and trends are developed at this stage.

Following the arrows, the process continues by addressing two related questions. These are illustrated as the diamonds labeled "Significant Indicator Change?" and "Is No Response OK?" The questions direct the data analysis effort when there is a positive, negative, or no (zero) change in the indicator data. Any of these states are considered important when evaluating the effectiveness of land use decisions or when developing or testing limits.

The first question concerns the magnitude or significance of an apparent change and is illustrated as the diamond labeled "Significant Indicator Change?" Data almost always contains some noise or collection errors and so requires some filtering. Use of the limits provided in Table A17-3 or their later replacements aids in the determination of significance. Knowing how close a current reading is to a trigger or threshold makes it easier to determine if a 1-unit change is a cause for concern. The experience of the resource specialist, statistical tools, input from the working group, previously collected data, and the developed or accepted limits are all used to successfully identify a significant change in an indicator. It is anticipated that in the beginning a "better safe than sorry" approach will prevail resulting in classification of most indicator changes as significant. However, as the data from the planning area increases, experience will winnow out those changes not deserving of further consideration.

The second related question is in response to the determination that an observed change in data is not significant; in other words essentially no change was measured. (This step appears in Figure A17-3 as a diamond directly to the right of the one just discussed). A "zero" or no response might be useful in evaluating the success or failure of a management practice. For example a decision is made to adopt a mitigation measure to benefit a resource but the indicator data continues to show no change. This could indicate a problem with the policy that should be further explored and, if necessary, corrected. Therefore, if a no change condition is encountered, the acceptability of this result is considered. If the lack of response in an indicator is acceptable, the process moves to the information-sharing step as shown by the arrow. (This box labeled "Communication with Public, Working Group, Other Agencies" is discussed later).

The next step in the process (the box labeled "Determine Cause(s)" in Figure A17-3) is entered by the need to identify the cause of a significant positive or negative change, or an unexpected "zero" response in the resource indicator data. This first involves the consideration of the validity of the data and its analysis, and only later attempts to identify the cause of an indicator data change. Validity should always be of the utmost concern. Confidence in all aspects of data collection and analysis is essential. Possible problems that may arise are misinterpretation, poor measurement methodology, or errors in the selection of a particular indicator. Discovering faulty information and addressing indicator problems early in the process helps avoid ineffectual decisions and wasted time.

Once assured that the data response is genuine, the effort turns to identifying the reason behind the new observations or the identified trends. This important task may require technical and investigative skills. The difficulty arises from the complex interrelationships within the planning area. Table A17-1 reveals there are few indicators unique to a single resource or a particular surface use. Therefore, a change in the collected data could be the result of a single factor, a combination of activities, or even an unanticipated agent. Hypotheses will have to be developed, tested, and discarded based on the accumulated evidence. A team approach may be appropriated to distribute the undoubtedly large workload and to allow a diversity of interpretations to be considered.

There may be cases, especially early in the term of the JMH CAP, where a definitive identification of a cause or causes is not achieved. Insufficient time may have elapsed to accumulate supporting data or a lack of experience with certain land uses activities are possible reasons. Under such conditions it is necessary to provide a way for the process to continue. It is reasonable to conclude that the cause behind the change cannot be identified and move the process to the next step, the diamond in Figure A17-1 labeled "Can or Should Cause Be Managed?" In the specific situation in which the cause could not be determined, the answer to this question is normally "No" and the process proceeds to the communications step (see below for the circumstances under which the answer might be "Yes").

The failure to identify a cause for a recognized indicator response is not a trivial matter, and every effort will be made to avoid this outcome. This decision would have to be defensible based on the data and the cumulative experience within the planning area. Possible options to correct or prevent reoccurrence should be

considered before carrying this conclusion forward. Modification of the indicator list, changes to the data collection and analysis procedures, or other actions may be necessary to address the problem (at which point the question posed in the "Can or Should Cause Be Managed?" triangle is "Yes" as these actions require changes in the management strategy). Further, cases where causes are not initially identified should be revisited periodically so as to not allow correctable conditions to persist or opportunities to go unrealized (in actual practice, reexamination of data from the planning area will be a continuing effort to gain the maximum benefit from the expended effort).

When the cause or causes of an indicator change are identified, the process moves to an important decision that is represented by the diamond labeled "Can or Should Cause Be Managed?" Specifically, the question involves whether it is possible or desirable to manage the cause in a way that improves, maintains, or corrects the observed results as measured by the indicators. In some situations, it may be impossible for BLM to affect the cause. This determination is made by BLM with the collaboration of the working group. If BLM decides against reacting to an identified response in the indicator data, the process finishes with a communications step where the data and conclusions are made available to interested parties.

The decision to react to an indicator change requires identification of the available options. This step is shown in Figure A17-3 as the box labeled "Identify Management Options." The development of responses to a manageable situation is expected to involve (to varying degrees) BLM resource specialists; BLM management; outside local, state, and federal agencies; and the JMH CAP Working Group. The task involves identifying and evaluating possible changes in land use or in project/proposal review procedures. Potential actions could include changing stipulations, reducing or increasing certain activity levels, allowing new uses, modifying objectives or measures, or adopting new evaluation criteria. The result is a list of possible modifications or actions that focuses on an identified condition, need, or opportunity.

The "Amend or Modify Land Use Plan?" diamond in Figure A17-3 is directed toward the decisions developed in the previous step. The question identifies those alternatives that are outside the scope of the JMH CAP. If the action was analyzed as part of the JMH CAP, BLM management has the option of immediately implementing the proposed response without further analysis. On the other hand, those decisions outside the scope of the JMH CAP, and considered to be the best response to an identified situation, will require additional action before implementation.

The conclusion that some or all of the desired solutions are not part of the JMH CAP analysis will add significantly to the process. National Environmental Policy Act of 1969 (NEPA) planning regulations are employed to insure adequate consideration of impacts, alternatives, and diverse views. The process allows for public input on significant alterations or modifications to the JMH CAP. It may require significant time and effort for a desired decision that falls outside the analyzed options to be adopted. However, if considered the best response for the situation, the effort will be expended to allow proper management of the planning area. Interim actions (within the scope of the JMH CAP) may be taken to address pressing situations. It is hoped that many of the actions supporting the management goals have been analyzed in the JMH CAP and amending or modifying the plan will seldom be necessary.

Though public and cooperator participation and communication is an integral part of the NEPA process, Figure A17-3 shows that a communications step is entered after the plan is modified or amended, or after a decision is made to take an JHM CAP allowable action. This is indicative of the importance placed on continued involvement of the public; the JMH CAP Working Group; and interested local, state, and federal agencies. A section on the subject of communication and participation is presented later in the appendix.

The final box in Figure A17-3 to be discussed represents the tie between the illustrated process and the resource and case specific review or approval processes. Labeled "Modify Project/Proposal Review Criteria" and located in the top right-hand corner of Figure A17-3, the step is the implementation of the decision

derived from the reaction to changes in the indicator data. These include such changes as revising thresholds, realigning goals, revising land use restrictions, and restructuring mitigation.

Not explicitly shown in Figure A17-3 are the procedures that relate to specific resource projects, proposals, or applications. APD, rangeland improvement, rights-of-way, and the other possible surface uses have established review and approval processes. Though tailored for the resource, all project or proposal considerations will share a common element; deliberations will take into account field observations, experience gained from observing the planning area, and the management vision. This recognizes the value of the monitoring effort by using the indicator data to predict and evaluate impacts, and employing field-tested of mitigation actions.

Besides being able to better evaluate land use projects, there are other equally valuable uses for the indicator data such as refining thresholds, triggers, or performance standards. There are a number of well established standards that the JMH CAP relies on such as the Standards for Healthy Rangelands. Many other standards have yet to be developed and are expressed in the planning document as a "first cut" or an assumption. These will require verification or refinement before being widely adopted. Note that the only way to determine the reaction to resource usage is to allow such usage and observe the results. This may mean that some land use decisions will be made for testing purposes.

As described earlier, use or development of the resources in the planning area will be allowed from the beginning. Data on the impacts of surface-disturbing or disruptive activities will be collected and compared with expectations, desired outcomes, or standards. The ultimate goal of the comparison is to determine the effectiveness of current management practices, policies, and prescriptions, and make necessary changes to foster continued success, improve observed results, or further understanding. In cases in which performance standards are still essentially assumptions, the observations are initially critiqued using the values in Table A17-3 as guidelines. As data and experience increase, these may be refined into the more traditional definition of "standard" or "threshold." In addition, the ongoing evaluation of data validity and usefulness is performed to maintain the effectiveness of monitoring resource conditions within the planning area.

Successfully developing performance standards or evaluating conditions within the planning area requires the combined effort of BLM and outside resource specialists. Other governmental agencies may have the expertise and information that enhances BLM ability to perform this task. In addition, the public has a role to play in the process. To help manage the diverse involvement, a JMH CAP Working Group will be formed. This would not be chartered under the Federal Advisory Committee Act (FACA). Membership would necessarily be restricted to full-time or permanent part-time officers of a governmental agency or elected officers of state, local, or tribal governments. The inclusion of the term "elected" means some of the members represent a constituency. These members provide a point of contact (POC) for the public. A more detailed discussion of participation and communication is presented in the next section. However, in all cases, BLM is the final decision maker involving federal surface or minerals, and this strategy does not affect that responsibility.

COMMUNICATION AND PARTICIPATION

BLM has a long standing policy to encourage the public to "participate" or involve themselves in the agency's day-to-day activities. The implemented JMH CAP management strategy encourages and rewards this level of interest. Comments, suggestions, concerns, and issues may be provided or raised at any time. Involvement of the public, industry, and other agencies will aid in the development of successful management actions tuned to the planning area.

Communication and outreach will make use of traditional and electronic means of sharing information and gathering input. As shown in Figure A17-3, the decision evaluation process has numerous public information

steps. Such items as updates to the indicator database, management decisions, applications for land use, and decisions related to the JMH CAP will be available from links on the BLM Wyoming State Office and Rock Springs Field Office Web sites. A limited number of hard copies of this material will also be maintained at the Rock Springs Field Office to accommodate those without Internet access. Confidentiality will be observed where appropriate, but the idea is to maintain up-to-date, publicly accessible information on the management of the planning area.

Meetings are seen as a necessary and valuable component of the management strategy. These provide an excellent opportunity for BLM and public interaction, and are planned semiannually for the first 3 years. As a kickoff, an informational meeting will be held within 2 months following signing of the JMH CAP ROD. It will focus on the management approach and how it will work in the planning area. Following meetings will mainly concern information dissemination. A "town hall" format will be used to allow interested individuals to express opinions or concerns about the planning area. BLM, however, will not request or take input during these forums on pending actions or decisions in compliance with FACA. Other avenues are open for the public to more directly affect management of the planning area such as through the NEPA process (if invoked) or the JMH CAP Working Group. A record of the informational meetings will be generated for review and archiving.

With access to the Internet almost universal, BLM will expand its use of this medium to communicate and inform. Already in existence is a link on RSFO home page to JMH CAP. The information carried here will expand to include location and time of the public informational meetings, records of past meetings, use proposals, relevant resource information, changes or new management decisions, changes in resource monitoring, special notices, working group news, and general interest stories. An e-mail contact specifically for questions or comments concerning the JMH CAP planning area will be employed as an additional POC with BLM.

Information will continue to be made available through traditional routes (e.g., special mailings, radio interviews, and newspaper articles) as appropriate or required by policy or procedure. The Rock Springs Field Office will maintain public files on JMH CAP that contain the same information available via the Internet.

The most important way the public has to participate in the management of the planning area is through the JMH CAP Working Group. Certain members of the working group represent constituents and so directly represent the public. It is anticipated these members will express the views of the public and act in their interest, thus involving citizens in the management process.

The JMH CAP Working Group is involved in many facets of the management strategy, including data collection and analysis, development of management practices, and input on land use proposals. Through regular meetings, the working group can consider numerous topics affecting the planning area, including mutual goals, policy coordination, resource conditions, pending actions or decisions, and opportunities for further cooperation. The working group will also act to monitor BLM adherence to the management strategy and suggest remedies.

The following is a preliminary membership list for the JMH CAP Working Group. Other participants (that meet the restrictions) may be added later if the group so desires:

- One representative from each state agency selected by the Wyoming Governor's office
- Three representatives from the BLM Rock Springs Field Office
- One representative from each of the three conservation districts
- One representative from the local and county governments in Sweetwater County
- One representative from the local and county governments in Sublette County

- One representative from the local and county governments in Fremont County
- One representative from each Native American tribe.

As previously stated, the non-FACA status means that all members of the JMH CAP Working Group must be full-time or permanent part-time officers of a governmental agency or elected officers of state, local, or tribal governments. Conservation districts in Wyoming meet this definition.

The exact role of the working group will have to be defined by the group itself. Developing its charter would be the main order of business at the first meeting. At a minimum, the working group would provide a POC with state and local agencies (e.g., WGFD) that can help analyze and interpret the data collected in the planning area, develop or evaluate proposed performance standards, and provide specific input to planning decisions. Certain group members (e.g., representatives from the three counties) provide avenues for direct public participation in the management of the planning area.

It will likely take several months and numerous meetings to formalize the JMH CAP Working Group depending on the commitment of the members. From the Powder River Basin Working Group experience, it is expected to take between 1 and 2 years before the group will be operational. However, the formation of the JMH CAP Working Group will not delay implementation of the described JMH CAP decisions or implementation of the monitoring plan.

APPENDIX 18—INFORMATION CONCERNING WILDERNESS STUDY AREA PROPOSALS WITHIN THE PLANNING AREA FOR THE JACK MORROW HILLS COORDINATED ACTIVITY PLAN

BACKGROUND

During development of the supplemental draft Environmental Impact Statement (EIS) for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP), the Wyoming Wilderness Coalition, following guidance in the *Bureau of Land Management (BLM) Wilderness Inventory and Study Procedure Handbook [H-6310-1]*, submitted a proposal for the designation of 10 new wilderness study areas (WSA) within the JMH CAP planning area (Map 18-1). While conducting the wilderness review and evaluation of these proposed areas, in accordance with H-6310-1, the BLM determined that only a portion of 1 of the 10 areas met the criteria for WSA consideration. This area was the Pinnacles Geographic Area (Map 18-2), which consists of approximately 8,950 acres. The Pinnacles Geographic Area was subsequently considered for WSA designation in both Alternatives 2 and 3 of the supplemental draft EIS for the JMH CAP; however, the Proposed JMH CAP did not propose WSA designation. Appendix 18 of the supplemental draft EIS further documented details on the location of WSA proposals submitted by the Wyoming Wilderness Coalition, the WSA inventory process under H-6310-1, and the results of the evaluations of the WSA proposals. In addition to the ten WSA proposals submitted by the Wyoming Wilderness Coalition, three additional proposals for WSA designation were submitted during the public review and comment period for the supplemental draft EIS (see Map 18-1).

SETTLEMENT DIRECTION FOR WILDERNESS STUDY AREA DESIGNATION

In April 2003, during the public review and comment period for the supplemental draft EIS, settlement of a lawsuit over the designation of new WSAs on BLM-administered public lands in Utah (State of Utah v. Department of Interior, 2003) resulted in a change of direction on WSA designation. The settlement between the State of Utah and Department of the Interior acknowledged the following:

- The authority of BLM to conduct wilderness reviews, including the establishment of new WSAs, expired no later than October 21, 1993, with submission of the wilderness suitability recommendations to Congress pursuant to Section 603 of the Federal Land Policy and Management Act (FLPMA).
- BLM did not have authority to establish WSAs after October 21, 1993.
- BLM will not establish, manage, or otherwise treat public lands as WSAs or as wilderness pursuant to Section 202 of FLPMA. BLM will only manage or otherwise treat public lands as WSAs and congressionally designated wilderness as established under Section 603 of FLPMA.
- BLM will only apply the Interim Management Policy for Lands Under Wilderness Review (H-8550-1) to WSAs established under Section 603 of FLPMA.

As a result of the settlement direction, the information contained in Appendix 18 of the supplemental draft EIS will not be repeated in this final EIS document. The Pinnacles Geographic Area and the three new WSA proposals submitted during the supplemental draft EIS public review and comment period were not considered for WSA designation in this final EIS. Existing WSAs within the JMH CAP planning area, as discussed in Section 3.7.1 of the final EIS, were established under Section 603 of FLPMA and will therefore continue to be managed as WSAs under the Interim Management Policy for Lands Under Wilderness Review (H-8550-1).

RESULTING CHANGES IN WSA PROPOSALS FROM THE SUPPLEMENTAL DRAFT TO THE FINAL EIS

Pinnacles Geographic Area

The BLM conducted an evaluation and comparison of the management actions for the proposed WSA (the Pinnacles Geographic Area) in Alternatives 2 and 3 of the supplemental draft EIS and the management actions in Alternatives 2 and 3 of the final EIS (which do not propose WSA designation) for the same area. As part of the evaluation and comparison between the supplemental draft EIS and final EIS, BLM looked at resource values of the Pinnacles Geographic Area, (such as visual quality, watershed stability, recreational use, minimal landscape intrusions, and disturbances), and what management was necessary to protect these values. BLM reviewed all management actions under Alternatives 2 and 3 for all resource categories in Chapter 2 of the supplemental draft EIS to determine if it was necessary to keep all management prescriptions under Alternatives 2 and 3 the same in the final EIS. The following are the results of the evaluation and comparison:

- For the Pinnacles Geographic Area, the management prescriptions for Alternatives 2 and 3 remain the same between the supplemental draft EIS and the final EIS to protect the values of the Pinnacles Geographic Area and to meet the management emphasis of each respective alternative.
- No change in the wording of the Preferred Alternative in the supplemental draft EIS was necessary in developing the final EIS Proposed JMH CAP as a result of not proposing WSA designation for the Pinnacles Geographic Area. Both the Preferred Alternative and the Proposed JMH CAP are consistent with Memorandum No. 2003-195, No. 2003-274, No. 2003-275, and Departmental direction.
- There is no difference in the environmental impacts with regard to WSA designation between Alternatives 2 and 3 of the supplemental draft EIS and final EIS because there was no change in the management prescription for the Pinnacles Geographic Area; therefore, the NEPA requirements for the final EIS are appropriately met and a supplement to the supplemental draft EIS, due to not considering WSA designation in the final EIS, is unnecessary.

WSA Proposals Submitted During the Supplemental Draft EIS Public Review and Comment Period

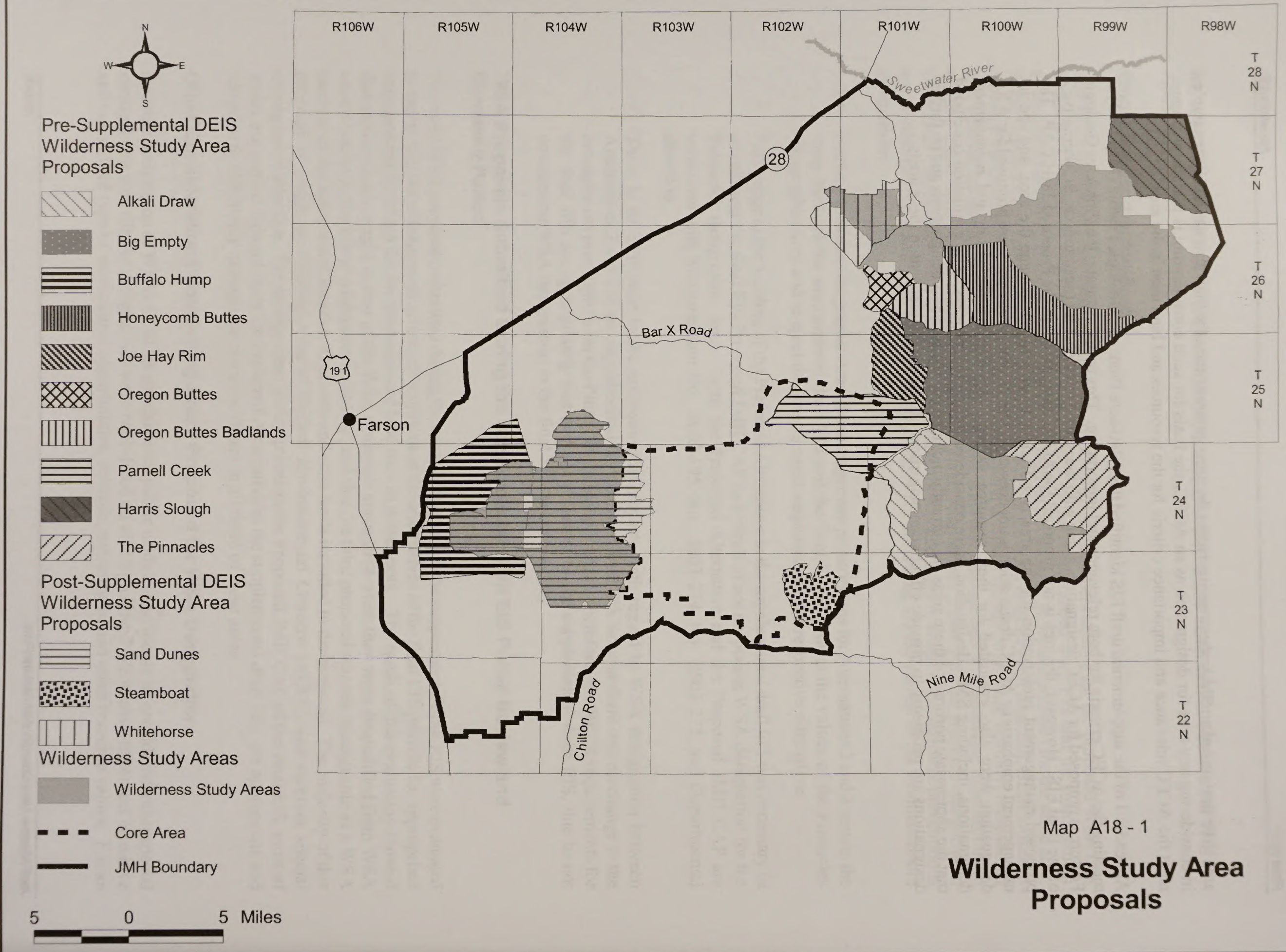
The three WSA proposals submitted during the comment period on the supplemental draft EIS were evaluated to assure that the management action prescriptions in the alternatives of the final EIS provide for appropriate management direction for the resources and land uses in those areas. The result of this evaluation showed that nothing has changed in two of the WSA proposals since 1984 when they were disqualified from WSA consideration in the initial wilderness inventory; and that the third proposal was not manageable as a WSA because of the amount and location of private and state lands included in the proposal. The majority of this proposal is within an existing Area of Critical Environmental Concern (ACEC) and receives special management attention. The management prescriptions in the Proposed JMH CAP of the final EIS, most of which are carried forward from the Preferred Alternative in the supplemental draft EIS, are appropriate and adequate to effectively manage the resource values in all three of these areas.

Other Considerations Concerning Areas Proposed for WSA Designation

Because designation of WSAs on BLM-administered public lands can no longer be considered, other special management area (SMA) designations were considered on all 13 proposed WSA areas to protect primitive and unconfined type of recreational opportunities, solitude, naturalness, and other resource values. For an

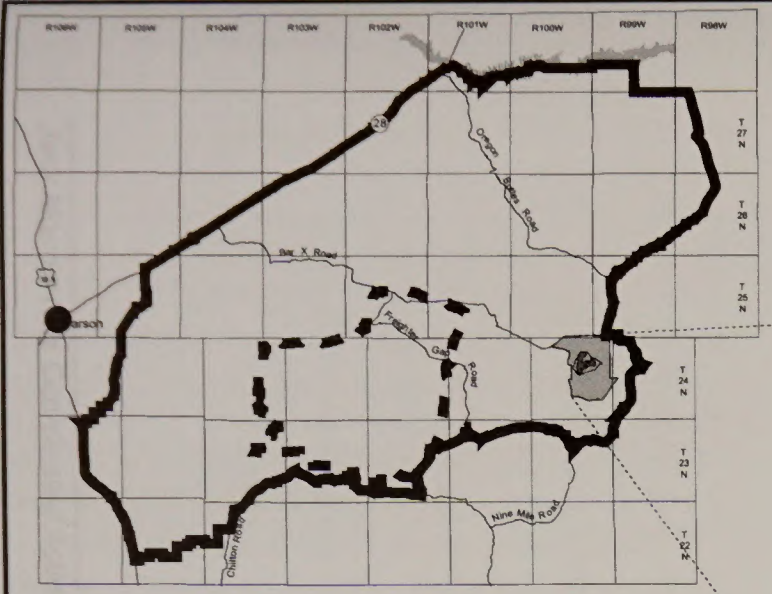
area to be designated an SMA, the area must meet the appropriate criteria for that designation. For example, in considering any area for designation as an ACEC, the basis for such consideration is that the area must meet the ACEC relevance and importance criteria for the resources and land uses in the area.

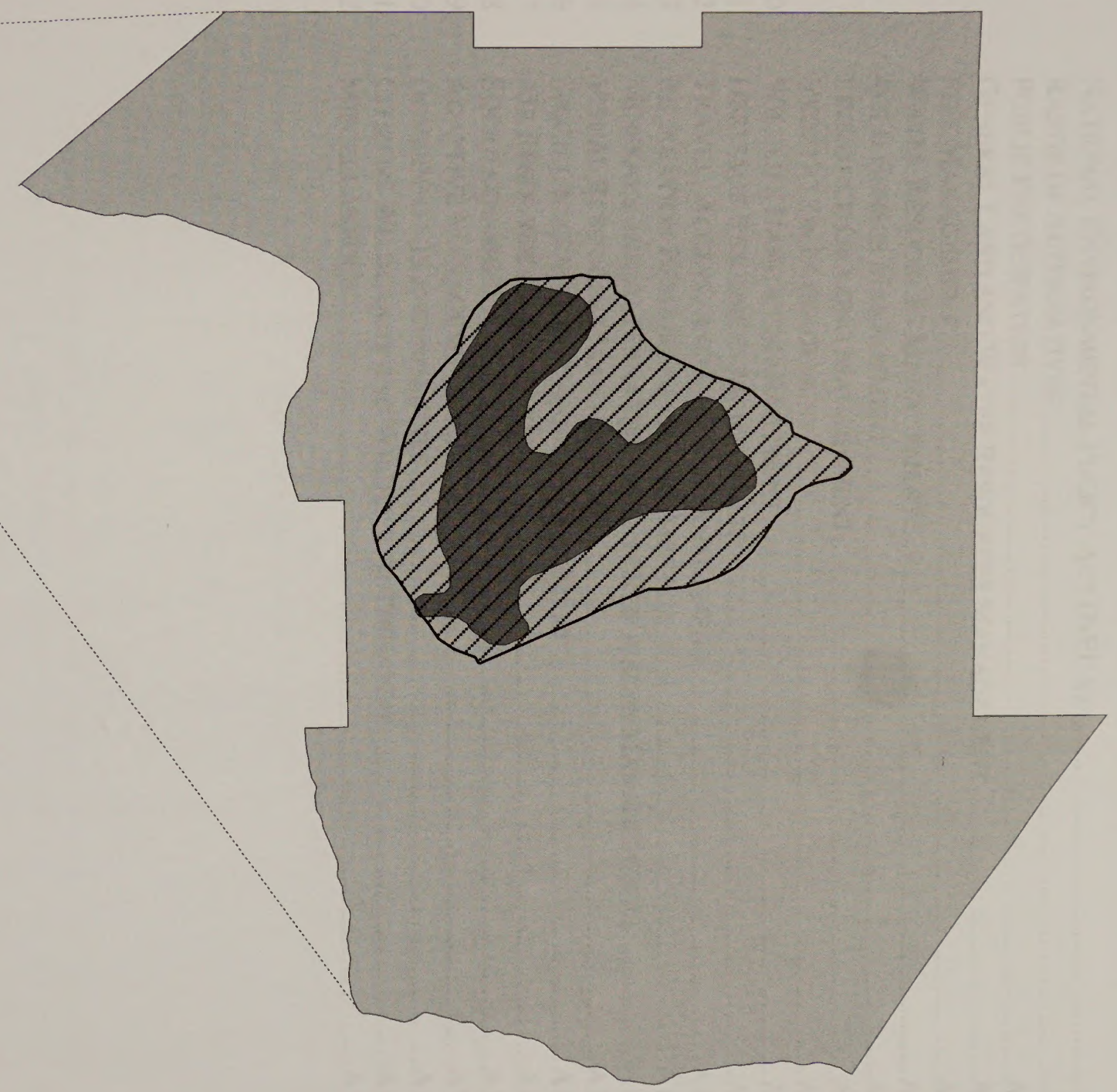
Appendix 1 of the supplemental draft EIS identified the 1,340-acre Pinnacles Geologic Feature (Map 18-2) as meeting the ACEC criteria for both relevance and importance. This is still accurate; the Pinnacles Geologic Feature is proposed for ACEC designation, along with the related management prescriptions, in Alternative 2 of the final EIS. However, the area is not proposed for ACEC designation in the Proposed JMH CAP. The proposed management prescription for the area is sufficient to effectively manage the area, and special management emphasis or ACEC designation is unnecessary. The 12 other areas that were proposed for WSA designation were also evaluated for their resource values. Appropriate mitigation and management designations, including SMA designation, were considered during this process. The evaluation concluded that the appropriate portions of these areas are currently included in existing SMA designations and no further designations are necessary to provide effective management of resource values within these areas.



Map A18 - 1

Wilderness Study Area Proposals





N
W
E
S

Pinnacles Geographic Area

Pinnacles Geologic Feature

Pinnacles Proper

1 0 1 Miles

Map A18-2

Pinnacles Geographic Area



TABLE OF CONTENTS

A-19.1	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	A19-3
A-19.2	RANGE OF ALTERNATIVES	A19-9
A-19.3	PUBLIC PARTICIPATION	A19-12
A-19.4	GENERAL LAND AND WATER RESOURCES MANAGEMENT	A19-14
A-19.5	FIRE MANAGEMENT	A19-16
A-19.6	WATER RESOURCES MANAGEMENT	A19-18
A-19.7	WILD HORSES MANAGEMENT	A19-24
A-19.8	LIVESTOCK GRAZING MANAGEMENT	A19-26
A-19.9	VEGETATION MANAGEMENT	A19-38
A-19.10	WILDLIFE HABITAT MANAGEMENT	A19-50
A-19.11	HERITAGE RESOURCES MANAGEMENT	A19-92
A-19.12	TRAVEL, ACCESS, AND REALTY MANAGEMENT	A19-111
A-19.13	RECREATION RESOURCES MANAGEMENT	A19-119
A-19.14	MINERALS AND ALTERNATIVE ENERGY RESOURCES MANAGEMENT	A19-124
A-19.15	VISUAL RESOURCES MANAGEMENT	A19-180
A-19.16	SPECIAL MANAGEMENT AREA MANAGEMENT	A19-182
A-19.17	AIR RESOURCES MANAGEMENT	A19-194
A-19.18	SOCIOECONOMICS	A19-202
A-19.19	ADAPTIVE MANAGEMENT	A19-228
A-19.20	GOVERNMENTS AND AGENCIES	A19-247
A-19.21	CITIZENS WILDLANDS AND WILDLIFE ALTERNATIVE	A19-279
A-19.22	MISCELLANEOUS	A19-295

APPENDIX 19—RESPONSE TO PUBLIC COMMENT

Appendix 19 contains responses to substantive comments (see Glossary for definition) received on the Supplemental Draft Environmental Impact Statement for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP)/Draft Green River Resource Management Plan (RMP) Amendment. Comments were received via written, e-mail, Web-based, and oral communication (public hearings) from members of the public, governments, governmental agencies, and nongovernmental agencies.

All comments were assigned a number according to the media from which they were received to facilitate comment tracking and analysis. However, because it was impossible to predict the number of comments that would ultimately be received, a comment number range of 100,000 was designated for each of the media sources to accommodate a potential large volume of comments. Based on past experience, comments were not anticipated to exceed this range. Given this numbering system, note that the comment number range chosen is not an indicator of the actual number of comments received. For example, a comment numbered in the 100,000 range does not mean that 100,000 comments were received.

- Web-based comments were assigned numbering in the 1 to 99,999 range
- Written comments were assigned numbering in the 100,000 range. Comments received at public hearings were considered written comments based on the official public transcript taken
- E-mail comments were assigned numbering in the 200,000 range.

A total of 69,471 public comments were received and analyzed for substantive comment information. The number of comments received via each media source is as follows:

- 60,288 e-mail comments
- 9,130 written comments
- 53 Web-based comments.

A majority (>99 percent) of e-mail comments are "form letter" type comments. Of the 60,288 e-mail comments, 60,020 are form letter comments. These comments voice support for the Citizens' Wildlife and Wildlands Alternative for the JMH CAP planning area, identifying the major aspects of this alternative. The written comments also include 8,638 similar "form letter" comments received in postcard format. Samples of these comments are included in Appendix 19A (see enclosed CD), along with all comment letters that contain substantive information. Responses for the entire Citizens' Wildlife and Wildlands Alternative (comment number 100,453) are provided in Section A-19.21 of this appendix.

All comments were reviewed and evaluated for response as outlined in BLM manual H-1790-1. Comments were addressed if they—

- Were substantive and related to inadequacies or inaccuracies in the analysis or methodologies used
- Identified new impacts or recommended reasonable new management options or mitigation measures
- Involved substantive disagreements on interpretations of significance.

In the case of unique comments, each response is preceded by the submitted comment. In the case of identical or similar comments, each response is preceded by a comment summary or representative comment.

The comment number(s) to which each response applies is shown before the actual comments and associated responses. The responses are primarily organized by BLM resource program and other applicable categories (e.g., governments and agencies). Consequently, a comment (written, Web-based, e-mail, oral) that addresses several resource programs may be responded to in various sections of this appendix. Responses to comments from governments and agencies are not organized by resource program, but are included separately in Section A-19.20 of this appendix.

In Appendix 19A (see enclosed CD), all comments that contain substantive information are included in their entirety and organized by comment number.

Table A19-1 of this appendix lists all the names and associated comment numbers of individual members of the public, governments, governmental agencies, and nongovernmental agencies that submitted substantive comments. The resource programs associated with each comment number are also included to facilitate identification of specific comments and associated responses throughout this appendix.

A-19.1 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Comment Number: 100,376

Comment:

It is untenable that BLM still insists that it cannot manage the public lands so as to exclude some commodity uses. The supplemental draft EIS states that to do so would "not meet the objectives of BLM's multiple use mandate" (supplemental draft EIS at 2-4). This is not true. Moreover, it flies in the face of the Solicitors opinion that required BLM to supplement its previous draft EIS on the Jack Morrow Hills; Memorandum to the Secretary of the Interior from the Solicitor (December 22, 2000).

FLPMA explicitly provides that BLM need not accommodate all resource uses on all lands.

BLM must consider the relative value of the resources involved. There are no replacements or substitutes for some resources on the public lands, such as crucial wildlife habitats, cultural and paleontological resources, clean air, clean water, and wilderness. As such, they have a greater relative value than resources that can be provided by other means or in other locations. The final JMHCAP must give special emphasis to preserving rare resources.

Response:

BLM agrees that Multiple Use, as defined in FLPMA, provides for managing the public lands and their various resources so that they are used in the best combination that will best meet the present and future needs of the American people. This direction indicates that not all uses need to be accommodated in all areas. The Preferred Alternative in the supplemental draft EIS and the Proposed Plan in the final EIS reflect this provision. Not all areas would be open to all types of uses in the JMH CAP area. In addition, not all areas would be open to uses in the same time frame. Management actions for all resources are provided in the preferred alternative and proposed plan, including those that provide protection of sensitive resources.

Comment:

The supplemental draft EIS admits that BLM lacks information on non-game species. There have been few inventories of prairie dog colonies despite the fact that they provide crucial habitat for several endangered and declining species. Air quality data is outdated. Only two percent of cultural resources have been inventoried. No information has been gathered from the tribes on Native American holy places. All of this information is relevant to BLM's management of the unique resources on the Jack Morrow Hills. Failure to obtain information relevant to the environmental consequences of a proposed action, absent "exorbitant" cost and disclosure under 40 C.F.R. § 1502.22(b), results in a failure to satisfy NEPA; if an agency's conclusions are "not supported by study or supporting documentation, [they] are insufficient to satisfy the agency's NEPA obligations." Siskiyou Regional Educ. Project v. Rose, 87 F.Supp.2d 1074, 1099 (D. Or. 1999).

The courts have held that the obligation to obtain missing information is an affirmative one: NEPA does, unquestionably, impose on agencies an affirmative obligation to seek out information concerning the environmental consequences of proposed federal actions. Indeed, this is one of NEPAs most important functions. As this court has held, "the basic thrust of an agency's responsibilities under NEPA is to predict the environmental consequences of proposed action before the action is taken and those effects fully known." Alaska v. Andrus, 580 F.2d 465, 473 (D.C. Cir. 1978), vacated in part as moot, 439 U.S. 922 (1978) (quoting Scientists Institute for Public Information v. AEC (SIPI), 481 F.2d 1079, 1092 (D.C. Cir. 1973)).

Response:

The BLM uses the best data available at the time the document is prepared. BLM uses the Wyoming Natural Diversity Database (WYNDD) and Wyoming Game and Fish Department (WGFD) databases for nongame species and any information acquired. The BLM also uses information from other sources when provided and appreciate the sharing of this data. One purpose of our many public meetings is to provide opportunities for individuals and entities to share resource information. Any data received is reviewed and included if applicable. Obtaining information on such resources as all nongame species and all cultural sites involves inventory and with wildlife species, trapping activities for all nongame species, which would be an exorbitant cost to the government. The BLM has noted this information in the final EIS.

BLM has consulted extensively with tribes concerning Native American Holy places that are referred to as Native American Respected Places. Please see Chapter 5 and Appendix 7 for additional information concerning this consultation process. Our management identified in the Preferred Alternative in the supplemental draft EIS and the Proposed JMH CAP in the final EIS provides for continued communication and consultation with tribes on these sites. Religious sites and cultural sites are considered proprietary data and are not mapped or else identified specifically in the supplemental draft EIS. Other features that are known and not proprietary have been made available in the supplemental draft EIS. BLM is pleased to note that it was one of our specialists who initially identified the Indian Gap Trail on the 1884 GLO plat and made this information available to tribes and the public. The air quality information for the supplemental draft EIS is provided in the Air Quality Technical Report for the Pinedale Anticline Oil and Gas Exploration and Development Project and is the current best available data. Updated air quality analyses will be performed for the Pinedale and Rawlins RMP updates. The BLM believes that a reasonable analysis of available data has been provided and an adequate basis for the proposed decisions provided using reasonably foreseeable development actions. Site-specific analysis of any activity on public lands would also identify if resource values such as cultural resources and sites of concern to Native Americans, prairie dog colonies or other resource values are present. The BLM will also continue to acquire new data and information as it becomes available.

Comment:

A mere listing of mitigation measures is inadequate. Northwest Indian Protective Cemetery v. Peterson, 795 F.2d 688, 697 (9th Cir. 1986), reversed on other grounds sub nom Lyng v. Northwest Indian Protective Cemetery, 485 U.S. 439 (1988). As the court noted, "a mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." Id. (citing Adler v. Lewis, 675 F.2d 1085, 1096 (9th Cir. 1982)).

The supplemental draft EIS seems to have drawn many of its mitigation measures from previous planning documents or other sources without any analysis of the efficacy of those measures. See, e.g., Appendix 5 and Appendix 6. For example, there is no discussion of whether the standard seasonal restrictions are adequate to protect crucial big game habitats on the Jack Morrow Hills. There is no evaluation of whether the buffers used in the past have improved the viability of sage-grouse leks and nesting areas.

Response:

Appendix 5 and Appendix 6 offer standard BLM guidelines for mitigation of surface disturbing activities to various resources and are not intended as a list of mitigation measures. These guidelines have been developed through various BLM planning efforts and are continually modified as additional information is obtained on the adequacy of each guideline. Specific mitigation measures are built into the management actions of each alternative and provide a range of management. Mitigation actions are then analyzed in Chapter 4 of the supplemental draft EIS to determine the adequacy of mitigation proposed in each alternative. As part of the Proposed JMH CAP implementation, monitoring will be conducted to determine the effectiveness of mitigation and adjustments in management made accordingly.

Comment Number: 100,455

Comment:

The supplemental draft EIS is fundamentally flawed, among other reasons, by its failure to provide a format for understanding impacts to resources. BLM chose a method of outlining management objectives (e.g., fire management, surface waters, vegetation, wildlife) and then proceeded to describe how each of the five alternatives would affect management goals and not environmental impacts. In preparing another supplement draft EIS for this area, BLM should make the document comprehensible - doing so will make it more than readable, it will also make the document meaningful. A much better way to present the information in the supplemental draft EIS would be to take one of the resource uses - such as oil and gas leasing and development - and then provide the different alternatives (e.g., number of wells, phasing of leasing, areas open, closed, NSO, etc.) for analysis. Within that section of the EIS, BLM could then take all of the other resources, such as water, soils and wildlife, and actually describe the impacts to these resources based upon the different development scenarios presented in the alternatives. This was not done for any resource use in the supplemental draft EIS and this major conceptual flaw in the design of the supplemental draft EIS renders it not only unreadable, unworkable and incomprehensible, but more importantly, virtually meaningless in terms of an actual analysis of impacts to the many, varied and unique resources within the Red Desert.

Response:

BLM disagrees. As noted above, the alternatives in a land use planning document are complete land use plan alternatives. In the case of the JMH CAP, each alternative analyzed in detail is a complete coordinated activity plan. The format for the supplemental draft EIS was developed in part in response to comments on the original draft EIS (June 2000) and was modified from the original draft EIS to reduce the amount of repetition between sections to facilitate reading and understanding.

The impact analyses then analyze the impacts of the various CAP alternatives, and the impacts are described by resource for each alternative. Where the impact analysis could be specific, it was so noted—for example with a particular effect to big game, elk, or the big sagebrush scurfpea vegetation type. The JMH CAP contains many broad management decisions, not site-specific actions. This results in developing a broad level of analysis. The entire impact analysis section for each alternative provides the analysis of effects to and from resources and where applicable, resource uses. For example, the impacts to fire management address the effects of management actions on this program. However, where a fire management activity affects a resource, such as vegetation, these effects are described in the vegetation impact analysis section. Where some of the effects exist and can be estimated, BLM has attempted to describe them in greater detail in the final EIS.

A-19.1.1 Cumulative Effects

Comment Number: 100,137

Comment:

Please look at the cumulative impacts and take your time to further scar the landscape with roads, noise and air pollution, making sure you are not causing irreparable harm to the land, the migrations, the air and the water.

Response:

Cumulative impacts have been updated in the final EIS and are discussed in Chapter 4 under each respective resource category.

Comment Number: 100,232

Comment:

The Wyoming BLM has not fully analyzed the impacts of this project. Some of the impacts include habitat fragmentation, loss of habitat for wildlife, increased roading in the area, and the construction of permanent structures. The BLM needs to assess the cumulative impacts of ponds and other energy infrastructure on extending the harmful impacts of livestock grazing.

CHD also feels that the BLM needs to better address the cumulative impacts of livestock grazing and other disturbances on the affected land. Your office must also assess harmful impacts of noise pollution on wildlife and recreational uses of the affected lands.

Response:

The cumulative effects discussion has been updated in Chapter 4 of the final EIS.

Comment Number: 100,327

Comment:

Cumulative impact in the JMH has not been sufficiently considered. As a patriot I am vitally interested in the management of American public lands. Accordingly, I have commented on over a hundred EAs and EISs. One pervasive quality worries me greatly. Each EA or EIS divides the proposed impacts into seemingly insignificant or barely significant impacts and rarely if ever, has any agency considered the sum of the impacts over time and space. For example, the BLM has never addressed, to my knowledge or satisfaction, the total amount of surface areas disturbed in the district through the years to roads, power lines, pipelines, building construction, infrastructure development and recreation development. Without a comprehensive cumulative impact analysis, we find ourselves in a position of not knowing enough to make good decisions because we can't grasp the total impacts.

Response:

The cumulative effects discussion has been updated in Chapter 4 of the final EIS.

Comment Number: 100,345

Comment:

The supplemental draft EIS is grossly insufficient in its treatment of cumulative effects. An adequate EIS would have addressed the cumulative effects of this project in consideration with all the existing and proposed energy projects in SW Wyoming. The EIS should address the complex issue of cumulative impacts, especially evaluating cumulative impacts of past, current, and future projects on migration corridors and movements of big game. One of the basic principles of NEPA is that the Federal Government shall attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable consequences. A cumulative analysis is critical to meet this important planning principle and should receive more attention in the final EIS.

Response:

The cumulative effects discussion has been updated in Chapter 4 of the final EIS.

Comment Number: 100,376

Comment:

We note with despair that the cumulative impacts analysis in the supplemental draft EIS contains no reference to the efforts of the Cumulative Impacts Task Force or the Green River Advisory Committee to design a framework for the assessment of impacts on big game habitats in the region. Moreover, the cumulative impacts analysis contained in the supplemental draft EIS is both superficial and misleading. For example, the supplemental draft EIS seems to recognize that the big game populations on the Jack Morrow Hills are part of larger herd units (Steamboat Elk, Steamboat Mule Deer, South Wind River Mule Deer, Sublette Pronghorn, Red Desert Pronghorn, and Lander Moose) and that these herds migrate. Still, the supplemental draft EIS contains little or no information on current population trends among these herds and no data on the types of activities occurring on the lands they occupy that might impact their numbers. The Red Desert Pronghorn Herd had declined to 89% of WGFDs population objective in 2001. More recent data indicates that it is at only 79% of this objective. Vegetation management, mineral production, and livestock grazing outside of the Jack Morrow Hills but within the respective herd unit will impact the pronghorn in the planning area. BLM must consider and evaluate the cumulative impacts of these and other activities across the affected herd units in order to assess the cumulative impacts to big game populations in the Jack Morrow Hills.

The cumulative impact analysis inappropriately focuses on elk. The desert elk herd is unique, but pronghorn and mule deer are an important wildlife resource on the Jack Morrow Hills. Mule deer are declining across much of their range. The supplemental draft EIS admits that the population in the planning area is already below WGFD objectives. BLM should review and disclose population trends for mule deer over the past ten years. The supplemental draft EIS should then analyze the impacts of various activities that may affect herds in the planning area. Those activities are not limited to the Jack Morrow Hills.

Pronghorn populations have declined nationwide from an estimated 1,000,000 animals in 1964 to 649,000 animals in 1997. During the same period, Wyoming's pronghorn population fell from 670,000 to 300,000. This trend is significant. Yet, the supplemental draft EIS contains no information on the vitality of the pronghorn herds on the Jack Morrow Hills. The Sublette Pronghorn Herd migrates over great distances. It is being affected by energy development and other human disturbances throughout its range. The supplemental draft EIS contains no discussion of these impacts. The range of the Red Desert Pronghorn Herd is under assault from both conventional oil and gas and coalbed methane projects. The supplemental draft EIS does not address these impacts. It is simply misleading of BLM to suggest that the only threats faced by these animals come from 314 new oil and gas wells on the Jack Morrow Hills. Thousands of new oil and gas wells and thousands of miles of new roads are being proposed on the public lands they roam.

Response:

The BLM has evaluated the documentation on the efforts of the Cumulative Impacts Task Force and Green River Basin Advisory Committee and has updated the cumulative effects analysis in Chapter 4 of the final EIS using similar analysis methods.

Comment Number: 100,452

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS.)

Comment:

I would like to point out and remind the BLM that they have a lot of good information already about the resources that are in this area, but they need to remember that FLPMA requires them to consider the relative scarcity of the values involved and the availability of alternative means including recycling and sites for realization of those values. Two principles are involved. Oil and gas development on the one side (mineral production) versus all of the other resources that the Jack Morrow Hills has to offer. Oil and gas can be replaced. They are not relatively scarce values, certainly not in Wyoming, and there are alternative means including recycling for realizing those values. I agree with the prior speaker that we do need oil and gas and we will need it for some time to come, but we have to start weaning ourselves off that need. To the extent that there are other options, we should be focusing on them. There are not other options. There are not other alternative means or sites for realizing that some of the values that the Jack Morrow Hills and the Red Desert, in general, provide. FLPMA also requires that BLM weigh long-term benefits to the public against short-term benefits. The benefits of oil and gas development are largely short-term benefits, they are largely private benefits. The long-term benefits that the Jack Morrow Hills have to offer, that they offer now, are those values other than oil and gas development, such as solitude, wildlife, habitat, primitive forms of outdoor recreation, biodiversity, habitats for rare plants, and so forth. I think those are the ones, in this balance, that should certainly weigh more heavily.

Response:

The BLM and the Proposed JMH CAP are mandated by FLPMA to operate under the principles of multiple-use, sustained yield, and environmental integrity. These principles, although simple in theory, are difficult to put into practice. Every user of the public lands naturally wants his or her particular use to predominate with little restriction or interference form other users. A major purpose of the JMH CAP is to resolve such conflicts or mitigate any adverse impacts of resource use. An equally important purpose is to protect the long-term productivity of the public lands. The JMH CAP and the Green River RMP thus try to protect the economic and activity interests of all current users, while minimizing conflicts and maintaining basic soil, vegetation, and wildlife resources that future users may require.

Comment:

In my work as a mental health therapist, we look at something called short-term benefits and long-term costs and I want to use that paradigm in some ways to look at this situation. What we are looking at are some short-term benefits. We are going to have money; we are going to have people coming in; we are going to be employing individuals, but what about the long-term costs? What about the effects on the environment? What about 15 years from now? In the Native American culture, whenever one makes a decision they look at seven generations ahead. The decisions we make today do result in consequences down the road.

Response:

Please see previous response.

Comment:

I know very well that once we touch the desert it is very hard to go back. It's actually probably impossible unless a major ecological catastrophe happens such as a major earthquake or something like that. That is the reason I would like to encourage the BLM to conduct more thorough studies on the potential impacts, the long-term impacts, of development in the Jack Morrow Hills before any development or exploration is furthered.

Response:

Potential impacts of management actions are discussed in Chapter 4 of the final EIS.

Comment Number: 100,455

Comment:

The BLM follows these first introductory sentences in their Cumulative Impacts "analysis" with more vague and vacuous statements speculating on possible cumulative impacts to vegetation, terrestrial wildlife, and aquatic systems, drenched in the language of uncertainty. Words like "may" and "could" are sprinkled liberally throughout this section, indicating that the BLM cannot predict with any certainty at all what the cumulative impacts to any species or community would be, even at the most vague and diffuse level of predicting whether populations will increase, decrease, or remain the same as a result of implementation of the Preferred Alternative. Thus, the supplemental draft EIS utterly fails to meet the most basic requirement of NEPA to analyze impacts and provide a sound comparison of alternatives.

Response:

By necessity, the JMH CAP must be developed using a broad and more finite level of analysis and contains a combination of broad and finite management decisions. Because the supplemental draft EIS is predecisional (i.e., no decisions have made), words like "may" and "could" are appropriate. Impacts of management actions for each alternative are discussed in Chapter 4 of the final EIS. The cumulative effects discussion has been updated in Chapter 4 of the final EIS.

Comment Number: 200,218

Comment:

Enlarge the consideration of the cumulative impact that such an extensive development of the various extractive industries (i.e., oil and gas, mineral mining, etc), as well as the other extraneous activities (i.e., pipeline and well inspections, increased human traffic, infrastructure obstacles, etc.), will invariably have on the indigenous native species; in particular, the pronghorn antelope, which to this juncture have not been adequately addressed. Studies should be funded by operators.

Response:

The cumulative effects discussion has been updated in Chapter 4 of the final EIS.

A-19.2 RANGE OF ALTERNATIVES

Comment Number: 100,345

Comment:

We argued in September 2000 that the entire area should be precluded from further development. At the least, the EIS should present one alternative that precludes further development in this area. The accelerated rate of energy development on adjacent public lands requires that an option of long-term protection of the JMH area should be part of the supplemental draft EIS.

Response:

BLM did analyze an option that precluded development in Chapter 2 of the supplemental draft EIS on page 2-6 under Alternatives and Management Options Considered but Eliminated from Detailed Analysis. In this section, the option of not allowing further development of existing leases was determined to be

unreasonable because all lands with existing leases are not so sensitive or critical that some level of development cannot occur. Some development has occurred in this area and is ongoing. The effects of this development as a whole and the development occurring in the area surrounding the JMH CAP planning area do not cause major conflicts with resources and users to the extent that the development should be precluded from the entire area.

Comment Number: 100,381

Comment:

All of the BLM's alternatives are skewed toward oil and gas development, and I fail to see how the agency has complied with the National Environmental Protection Act with this incredibly narrow range of alternatives.

Response:

The supplemental draft EIS does provide for a reasonable range of alternatives and did consider not allowing additional oil and gas development. Please see response to letter 100,345. Closing the entire area to leasing and development would be contrary to the BLM multiple use mandate because less restrictive measures were determined adequate to protect lands and resources in the JMH CAP planning area.

Comment Number: 100,455

Comment:

At page iv of the supplemental draft EIS, BLM defines the No Action Alternative as the continuation of present course of management based upon the 1997 Green River RMP. However, at page 1-1, BLM states that it deferred "mineral leasing and mineral location decisions within the JMH area" until the current JMH CAP planning effort. Therefore, for all mineral leasing and location - not just within the JMH "core" - there is no current land use planning to revert to. As such, for one of the principal areas of concerns of the current supplemental draft EIS and land use planning, BLM has inappropriately defined the "no action" alternative. A true baseline for which to compare impacts of the various action alternatives would be no new leasing and development on the 575,000-acre federal mineral estate in the JMH CAP planning area.

Response:

BLM disagrees. Sections 1.2 and 1.3 in Chapter 1 further clarify the decision that was made in the Green River RMP that led to the development of the JMH CAP. The Green River RMP deferred the leasing decisions in the Core Area, and this is the direction provided in the No Action Alternative. Not leasing the entire JMH CAP planning area was considered in Chapter 2 of the supplemental draft EIS on page 2-6 under Alternatives and Management Options Considered but Eliminated from Detailed Analysis. The proposal was eliminated from further analysis because resource conflicts tend to be located in specific, scattered areas and are therefore not conducive to area wide planning. Closing the entire planning area to new mineral leasing would eliminate mineral development and production activities in areas in which conflicts do not exist, thereby placing unreasonable restrictions on such activities. In addition, the CEQ guidelines state that in the cases of land use plans, "no action" is "no change" from current management direction or level of management intensity." A preliminary description of the No Action Alternative, and Alternatives 1, 2, and 3 were also made available for a 30-day public review on our Web site in April 2002.

Comment:

Of the 575,000 federal acres in the planning area, approximately 239,000 acres are already under lease (supplemental draft EIS at p. 3-71). First, BLM has failed to take a meaningful look at trading or buying back these leases (or at least the non-producing leases) to protect this entire area from oil and gas development. Second, outside of WSAs that legally cannot be leased, BLM proposes to close just 26,000 acres, or less than 5% of the planning area, to oil and gas development. Except for Alternative 2, which does propose closing most areas to leasing (in fact, reaching a number that somehow closes already leased areas to leasing), the three other action alternatives, excluding WSAs, mirror each other: from zero acres discretionarily closed to leasing to 9,000 to 26,000 acres. Simply put, this is far from the full range of reasonable alternatives.

Response:

BLM disagrees. Alternative 2 in the supplemental draft EIS does address the opportunity for buying back or trading leases with willing parties. The current development and impact analyses among the alternatives indicate that some development can take place within the planning area and there is not a need to buy back or trade all leases. Please see above responses and responses to number 100,377 for consideration of a full range of alternatives, including alternatives and management options considered but eliminated from detailed analysis.

Comment:

BLM has set up the entire EIS framework in a manner that focuses solely on resource allocation rather than the equally important goal of analyzing environmental impacts. In addition, by having to constantly flip to appendices where most of the few details in this supplemental draft EIS are contained to be able to understand some parts of Chapter 4, this supplemental draft EIS violates the readability requirement of NEPA.

Response:

The objective of a land use planning document is to identify land use plan alternatives that provide for resource allocations and uses. In addition, analysis of impacts is a key part of the NEPA process. Without the alternatives, the environmental impacts cannot be addressed. The document format was based on comments provided on the original draft EIS that there was too much repetition and the document too long. Explanatory materials were placed in the appendixes to facilitate review of the document and provide needed information.

Comment:

The present set of alternatives is far from exploring the reasonable set of alternatives that is required by NEPA. For oil and gas decisions, BLM did not address an alternative that would prohibit all new leasing in the JMH and that would rigorously explore buying back or trading existing leases. BLM did not address an alternative that would reduce impacts of mineral leasing and development through directional drilling and other proven technologies. Regarding grazing, BLM failed to explore different options such as limited or sequenced grazing permit retirements, reductions in AUMs and different grazing techniques including limiting or ending hot season grazing.

Response:

BLM believes it has met NEPA requirements by providing a reasonable range of alternatives. BLM considered closing the planning area to new leasing as detailed in Section 2.1.3.3 of the supplemental draft EIS. BLM has also considered closing all sensitive resources to new leasing in Alternative 2. Mitigation to reduce impacts of mineral development is evaluated at the site-specific analysis (application

for permit to drill [APD]) stage of BLM planning. Directional drilling and other proven technologies have limited applications and are considered tools to mitigate impacts of mineral development. These measures would be considered through site-specific analyses. Page 2-10 outlines management practices for meeting the "Wyoming Standards for Healthy Rangelands." These management practices were included in all alternatives and analyzed in Chapter 4 of the supplemental draft EIS.

Comment:

One alternative missing is a true conservation alternative to protect the Red Desert's wilderness qualities and wildlands. At page 2-4, BLM states that managing for maximum development, production, or use of one resource at the expense of others would "not meet the objectives of BLM's multiple use mandate" under FLPMA. This is an incorrect statement of the law - BLM is free to mix, match and allocate different (or no) use levels given the resources at stake, public input and other considerations.

Therefore, in land use planning, BLM need not manage for all uses simultaneously - it can "use some land for less than all of the resources" and take into account the impairment to wildlife, cultural, religious, scenic and historical resources and form an alternative that manages for these resources above, e.g., fluid minerals. This is particularly true where public lands in Wyoming are over 90% open to leasing, and massive oil and gas exploitation is already occurring on public resources in the nearby Pinedale and Great Divide field offices, in addition to other large-scale projects within the Green River resource area - and not to mention the 51,000 coalbed methane wells planned for the Wyoming portion of the Powder River Basin. The failure to exclude a pure conservation alternative is also troublesome given that BLM Wyoming was specifically directed by the Secretary of Interior in 2000 to develop a new set of alternatives with a resource conservation alternative being the preferred one.

Response:

Alternative 3 was developed as a conservation alternative that provides opportunities to use and develop the planning area while ensuring resource protection. The alternative would allow development and activities to occur throughout the planning area provided sensitive resources are protected and mitigation requirements are met. In addition, the Preferred Alternative includes management actions that provide for timing and sequencing of activities to address your concern that BLM need not manage for all uses simultaneously. Please note the clarifications provided in the Proposed JMH CAP in the final EIS.

A-19.3 PUBLIC PARTICIPATION

Comment Number: 100,376

Comment:

We have received troubling reports that BLM may refuse to accept comments submitted on postcards or via the websites of environmental organizations. While some of these comments may be duplicative of those already submitted by others, BLM should be willing to listen to every member of the public who wishes to be heard on the management of the public lands. When making a determination about whether a particular use of lands is in the public interest, it does matter whether 30 people or 30,000 people support BLM's action.

Response:

BLM welcomes all comments submitted on the supplemental draft EIS. They play an important part in the planning process and help us improve our NEPA documentation and ultimately our decisionmaking. BLM has heard of no such reports and has accepted any comments provided to us by postcard, e-mail, Web site, etc. However, as a result of damage to our fax machine, BLM did not accept a flooding of form-

based comments via this method. BLM provided a Web site with a comment form and an e-mail address for ease of electronic comments. BLM also received written letters and postcards. Comments are on file in the Rock Springs Field Office for anyone to review during regular office hours of 7:45 a.m. to 4:30 p.m., Monday through Friday, except for holidays.

Comment Number: 100,452

Comment:

The agency has repeatedly failed its obligation to sponsor a fair and even-handed public comment process. The National Environmental Policy Act requires agencies to hold public hearings when there is "substantial environmental controversy concerning the proposed action or substantial interest in holding the hearing." And the BLM's own handbook states that meetings should be held at times and places that facilitate and encourage public participation. Recent actions by the BLM show that agency decisions regarding public participation have not met the spirit and intent of those regulations, and they leave us gravely concerned that the agency has shown a predisposed bias towards industry.

The Laramie hearing was advertised as open to the public, was held to the same standards as the official Rock Springs and Lander hearings, and participants conducted themselves with greater restraint and decorum than at either of the BLM-sponsored events. The agency's refusal to attend sent the message that the BLM is uninterested in what the public has to say.

In contrast with the previous examples in which the public requested public hearings but was denied and the refusal of the BLM to attend an organized public meeting, in the Jonah case, at the request of industry BLM willingly changed the location of the hearing and turned in into an industry event. This double standard is unacceptable and we are concerned that this type of misconduct by the agency may bias the outcome of the public scoping process.

Response:

Thank you for your comment. BLM believes it has met NEPA requirements and has provided equal and ample public participation opportunities by holding open house meetings and hearings in Rock Springs and Lander. BLM has also recognized the broad public interest in this planning effort and provided ample opportunity for those who were unable to participate in the open house meetings and hearings to provide written comment via the Internet or U.S. mail. Public participation will continue to be a key component through the remainder of the planning process.

Comment:

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS).

As the BLM develops its management plan, and the one that they presently developed is really insufficient…but as they write and consider their management plan, they should make the wildlife values and the environmental values of this very special area a priority. And that is, other types of resource considerations need to be secondary to the preservation of this unique area. The present document is not very adequate in that regard. It talks occasionally of protection, but does not offer any kind of detail on how they are going to do it. Instead, it seems to come up with criteria or with a goal of developing oil and gas and then trying to fit everything else around it.

Response:

BLM manages for multiple use, and the Preferred Alternative provides for a balance of resource uses in the planning area.

Comment Number: 100,458

Comment:

In the past few weeks I've been working to get people from Southwest Wyoming to come to this meeting, and it has been extremely difficult because it's a lot to ask. In speaking to people from Laramie, Cheyenne, and Rawlins, I found that the great majority were interested in attending a meeting on this issue, but were unable to make the trek because they had to work or had other responsibilities in the towns where they live. I feel like BLM, in light of this, must seriously reconsider their decision to exclude the public of Southwest Wyoming. Many of these people that I spoke to feel like they do have a say in the issue, and that they would benefit, both they and, and the Agency would benefit from some type of interaction.

Response:

BLM believes it has met NEPA requirements and has provided equal and ample public participation opportunities by holding open house meetings and hearings in both Rock Springs and Lander. BLM has also recognized the broad public interest in this planning effort and provided ample opportunity for those who were not able to participate in the open house meetings and hearings to provide written comment via the Internet or regular mail. Public participation will continue to be a key component through the remainder of the planning process.

A-19.4 General Land and Water Resources Management

Comment Number: 100,036

Comment:

BLM has released a supplemental draft EIS that not only doesn't address, but doesn't even appear to consider the comments of many Wyoming residents submitted at that time.

Response:

As required by the BLM planning process, BLM reviewed and evaluated for preparation of the supplemental draft EIS all public comments received pertaining to the original draft EIS, public scoping, and the management alternatives.

Comment Number: 100,342

Comment:

Desired Plant Community (DPC). We are very much in support of the DPC concepts, and suggest you add that they will be developed ASAP in each allotment in consultation with the permitee, and that order 3 soils surveys and ecological site descriptions will be developed as the basis for DPC objectives.

Vegetation Treatments. We do not feel that the state of the art rangeland science will support a position of always requiring one year of rest before treatment, or always a two-year rest after treatment. This narrative should provide the flexibility for more or less time than the rest periods proposed in the Draft for this section, if the on-the-ground situations dictate or by agreement between the BLM and permittees.

Response:

Soil surveys are not within BLM jurisdiction, but fall within that of the Natural Resources Conservation Service (NRCS). Surveys will be conducted by the NRCS as funds become available. As surveys are developed, BLM will incorporate that information into DPC objectives. DPCs will be developed by BLM with input from all interested parties.

The Preferred Alternative provides the flexibility to alter the time frame for pre- and post-rest of treatment areas from livestock grazing. The supplemental draft EIS (page 2-94) states that exceptions may be granted when more or less time is indicated by an onsite analysis, which includes input from interested parties. In many cases, rest before treatment will not be required. However, where sufficient fine fuel to carry a fire is not present, resting the area for up to 1 year may be required to make treatment possible. In some cases, complete post-treatment rest may not be necessary. Experience and research have shown that post-treatment grazing management in some areas can be critical to achieving the recovery potential of the treated vegetation.

Comment Number: 100,376

Comment:

BLM's standards and guidelines and the *Fundamentals of Rangeland Health* addressed in this section have potential applicability and utility for properly managing all resource uses in the planning area. For example, many standards and guidelines and the *Fundamentals of Rangeland Health* would be appropriate as stipulations to oil and gas leases to ensure against unnecessary or undue degradation. Consequently, as part of this planning effort, the BLM should consider what changes if any are needed to extend the standards and guidelines and *Fundamentals of Rangeland Health* to all other programs, and the JMHCAP should provide for their adoption as requirements to guide all future management activities and decisions. The standards and guidelines, and the *Fundamentals of Rangeland Health* provide a convenient means to meet many of the requirements highlighted in these comments.

Response:

The *Wyoming Standards for Healthy Rangelands* does indeed apply to all other programs. The standards are the basis for the health of the vegetation throughout the planning area. As surface disturbing activities take place, a BLM review of the area will identify what is causing a particular standard not to be met. This will dictate the management options and what actions are needed to correct the situation.

Comment:

The EIS should address issues related to fires and fire policy. The JMHCAP should:

- Provide that fire suppression efforts and related vegetation management efforts (like thinning) are focused on the "wildland urban interface." Remote areas should not be subject to mechanical vegetation management activities.
- Establish an ecologically based fire restoration program so that fire can play its natural and necessary role in the planning area.
- Prohibit any mechanical treatments (e.g., thinning) of vegetation in lands proposed for wilderness designation.
- Prohibit road building as a means to accomplish any vegetation treatments in furtherance of the fire policy. If "non-permanent" roads are allowed, there should be strict assurances that such roads will be temporary.

- Be consistent with the *Western Governors Associations' 10-Year Comprehensive Wildfire Strategy* prepared in 2001.
- Provide that riparian areas are restored so that they can serve as natural firebreaks.

Response:

All fire-related activities in the planning area will be conducted in accordance with existing fire policy.

There are no identified Wildland Urban Interface issues in the Planning Area at present. The only vegetation management proposed is to treat up to 5,000 acres with prescribed fire. The purpose of these treatments is to reintroduce fire to those limited areas where fire historically played an ecological role. Most of the planning area has a history of very low fire frequency. No mechanical treatments are proposed for the planning area.

Thinning is a tool for forested fuel types. Timber stands of any significance do not occur within the planning area.

As outlined in BLM Handbook H-8550-1, *Interim Management Policy for Lands Under Wilderness Review,* no mechanized activities are allowed within existing WSAs; therefore, no mechanical treatments within existing WSAs will be conducted as part of this planning effort.

The plan does not propose to build any roads to conduct vegetation treatments.

BLM actions taken under the Riparian-Wetlands Initiative (RWI) to maintain, restore, or enhance riparian/wetland areas to at least proper functioning condition will assist in providing natural firebreaks. It should be realized, though, that many of our stream riparian areas are very narrow (some as small as 5 feet), even in good condition; in these instances, they would not contribute to slowing a fire's progress. However, there have been some cases within the planning area in which fires have stopped at the edge of the larger riparian areas. Under the Preferred Alternative, actions would continue to be undertaken to improve our riparian/wetland and aquatic resources for a multitude of benefits.

A-19.5 FIRE MANAGEMENT

Comment Numbers: 100,342; 100,343

Comment:

Fire suppression: Fire should be allowed for the purpose of removal of sagebrush that has encroached on meadow type habitat and created closed canopy uplands, and should always be planned in consultation with the permittee.

Response:

The Preferred Alternative proposes to treat up to 5,000 acres of vegetation in the planning area with prescribed fire. All prescribed burning activities are consulted and coordinated with affected grazing permittees. Agreements for post-treatment management are a standard operating procedure for the RSFO.

Comment Number: 100,455

Comment:

The BLM outlines options for brush "control," a method for destroying the natural sagebrush communities in hopes of increasing the amount of forage for livestock permittees. This practice is rather

ineffective at increasing graminoids, and often has detrimental impacts on wildlife through direct habitat destruction and habitat fragmentation. There is a prevailing belief among range managers that vegetation treatments that reduce or eliminate sagebrush stimulate a compensatory growth of forage grasses. Proponents of this program argue that there is a need to return the landscape to its pre-settlement mosaic, which was driven by wildfire. However, there are absolutely no reliable data available for the Jack Morrow Hills on pre-settlement fire frequency or the landscape pattern of fire-driven habitat mosaics. Thus, proponents of this policy have no scientific backing for a campaign of widespread sagebrush eradication that would recapitulate the ecologically disastrous efforts west-wide in the 1960s and 70s.

Response:

Vegetative management using prescribed fire does not destroy sagebrush communities. Sagebrush is the climax vegetation for treated sites, and it will again occupy these areas. The length of time required for sagebrush to return to pre-burn dominance is dependent on many variables, some of which include post-burn livestock grazing management, site potential, type (species) of sagebrush, climate, and pretreatment community composition. References cited in paragraphs two and three on page 56 and paragraph one on page 57 of this comment letter are testament to this fact.

Vegetative management using prescribed fire is not intended for "increasing the amount of forage for livestock permittees." In fact, prescribed burning is a tool to manage vegetation and to achieve *Wyoming Standards for Healthy Rangelands*. Although increased and improved livestock forage may be a secondary benefit, not all treatment sites will be available to livestock as a result of topography or distance from water, for example. The Bureau proposes to treat overmature sagebrush stands primarily to improve watershed function, release important mountain shrub and Aspen communities from competition with encroaching sagebrush, reduce the encroachment of species such as juniper into the sagebrush type, and improve habitat conditions for many wildlife species.

Historic natural fire occurrence in the planning area is low, but occasional lighting caused fires have been reported: four so far in 2003. The Bureau proposes to treat up to 5,000 acres in the planning area over a 20-year period. This small relative acreage (0.08 percent of planning area) is recognition of the low incidence of natural fire and does not qualify as "widespread sagebrush eradication." The acreage proposed for treatment would not be contiguous and would be the result of several individual projects in separate suitable sites.

All treatments will have a site-specific environmental analysis prepared and reviewed by an interdisciplinary team of Bureau resource staff specialists. Prescribed burns will be rested from livestock grazing a minimum of two growing seasons following treatment.

The scientific literature and field experience have demonstrated significant increases in the diversity, density, and production of herbaceous vegetation following the treatment of sagebrush with fire. Not all sites have the same magnitude of this response. A healthy herbaceous understory before burning is essential to successful vegetative response.

The big sagebrush/lemon scurfpea association is designated for full suppression of wildfire.

A-19.6 WATER RESOURCES MANAGEMENT

Comment Number: 100,137

Comment:

There is a fine balance for many landscapes and the animals that visit, migrate, and call the Red Desert home. There is also a fine balance of life down wind in the Wind River Mountains. This landscape is showing signs of increasing acidity in the water cycle.

Response:

BLM manages upland and riparian resources. Land use restrictions and actions designed to protect water resources are implemented in all alternatives. Acidified precipitation, along with all other aspects of air and water quality, is the purview of the State of Wyoming Department of Environmental Quality (DEQ).

Comment Number: 100,145

Comment:

This alternative (Alt 3) also seems excessive on riparian area buffer areas. Though I agree with the enclosure provisions to a point, if considered on a case-by-case basis by professional range managers with input from affected parties (read ranchers, wildlife managers and mineral lessees), considerations should include the effect of the current drought, and case by case condition of these areas.

Response:

Alternatives developed for this analysis were formulated to address a full range of management actions that could be implemented for the planning area. Alternative 3 provides considerable protection to sensitive resources and imposes restrictions on land uses to achieve desired conditions. The size of the protective areas around riparian areas under Alternative 3 was proposed as such to remain consistent with the theme of the Alternative and help achieve a full range of management actions. Conditions such as drought are not sufficiently predictable to be addressed in this type of long-term plan and are dealt with in a more responsive manner than is available in this document.

Comment Number: 100,232

Comment:

CHD believes that the BLM needs to address the impacts to soil and water. The proposed decision must better assess the increased soil erosion and runoff. Your office must better assess the impacts to aquifer depletion.

Response:

Impacts to soil and water are discussed in Chapter 4 of the supplemental draft EIS. It is stated that impacts would increase under alternatives that allow for increased development. However, the supplemental draft EIS also states that the level of significance of the impact would depend on the rate and location of development activities and the rate and effectiveness of reclamation. Site-specific impacts would be further analyzed in additional NEPA documentation when development activity is proposed.

Comment Number: 100,332

Comment:

Page 3-6 The Green River does not cross the JMH CAP planning area.

Response:

The statement, "Quaternary aquifers generally contain the highest-quality water, with TDS ranging from 100 to 200 mg/l in the headwaters, to 700 mg/l along the Green River. Within the planning area, it is anticipated that TDS levels would be on the high end of the range because of local influences of the Green River Formation...." found on page 3-6 refers to general regional trends that were used to estimate the most likely conditions to occur within the JMH CAP planning area.

Comment Numbers: 100,342; 100,343

Comment:

BLM needs to consult with the permittee with the planning of riparian exclosures. Maintenance on the exclosure should be conducted by the beneficiaries of the exclosure.

Response:

It is standard operating procedure to consult with the permittees regarding the planning of riparian exclosures. Maintenance is determined on a case-by-case basis.

Comment Number: 100,376

Comment:

FLPMA requires that land use planning and the resulting plan provide compliance with "pollution control laws" such as Clean Water Act (CWA). 43 USC 1712(c)(8). To do so, BLM must ensure that all streams on its lands comply with federal and state water quality standards. Yet, the supplemental draft EIS contains little information on the current condition of surface waters within the planning area. For example, according to the supplemental draft EIS, only Pacific, Jack Morrow, and Killpecker Creeks have been "sampled" for total dissolved solids (TDS) and "other constituents" (supplemental draft EIS at 3-5). There is no information on the Sweetwater River except that its "suggested use" is domestic (supplemental draft EIS at 3-5).

Without additional information, it is impossible to tell whether the surface waters within the planning area currently comply with federal and state water quality standards. Moreover, BLM cannot determine whether the additional activities it intends to authorize pursuant to the JMHCAP will result in violations of CWA. For example, according to the supplemental draft EIS, "no information is available to date supporting water quality standards for any of the [livestock grazing] allotments" on the planning area. Yet, livestock contribute to fecal coliform pollution in surface waters.

Response:

Water quality and related compliance issues are the purview of the State of Wyoming through the DEQ. BLM assesses riparian area health through functional assessments under the "Wyoming Standards for Healthy Rangelands." For its part, the BLM works to maintain healthy vegetation and soil conditions, which in turn help in the retention and filtering of water resources.

Comment:

According to the supplemental draft EIS, 79% of riparian areas and 87% of wetland areas in the planning area are not in Proper Functioning Condition (PFC) (supplemental draft EIS at 3.3). Moreover, half of the riparian areas and all of the wetland areas functioning at risk "exhibit a downward trend and show signs of becoming increasingly unstable" (supplemental draft EIS at 3-3). Given these facts, it seems likely that many of the adjacent surface waters may already exceed state water quality standards for TDS as well as turbidity or other non-numeric standards. Yet, the JMHCAP adopts no restrictions on livestock grazing in riparian or wetland areas.

Response:

TDS and turbidity are related but not directly tied to riparian functionality. Based on the limited water quality data available, state water quality appears not to have exceeded state standards for agricultural or livestock water.

The "Wyoming Standards for Healthy Rangelands" (which include a riparian component) provide a desired condition for all rangelands within the planning area. BLM works with permittees and other interested public to develop strategies to achieve those standards.

Comment:

Most of the planning area is subject to the Colorado River Salinity Compact, a basin wide approach for controlling salinity in the waters that naturally drain into the Colorado River.

Because nonpoint sources are a significant contributor to salinity (see supplemental draft EIS at 3-5), the supplemental draft EIS should include an assessment of the efficacy of current mitigation measures, including so-called Best Management Practices (BMPs), to ensure that salinity levels in the Colorado River are not adversely impacted by activities authorized under the JMHCAP. Adoption of a Total Maximum Daily Load (TMDL) for TDS for streams within the Colorado River watershed would be an important tool for achieving salinity control.

Similarly, the JMHCAP should make provision for implementing BLM's Riparian-Wetland Initiative, particularly the objective of restoring 75 percent of riparian areas to PFC. Only about 1% of the lands managed by the BLM are wetlands, yet these are some of the most ecologically important landscapes within the public lands. Some 70 percent of all Wyoming's wildlife either reside within riparian areas or utilize them as an important component of their habitat. It is critical, therefore, that the BLM's Riparian-Wetlands Initiative (RWI) be fully implemented in the JMHCAP.

Response:

TMDLs are not applied to all streams for which a problem may exist. TMDLs are established on streams that have been determined not to meet state water quality standards. In Wyoming, this task is the DEQ's responsibility.

BLM has implemented the RWI into its management policy. Although all RWI goals may not have been achieved to date, management actions are designed to ultimately reach those goals. The goal of the Rock Springs BLM is to have 100 percent of the streams and wetlands within the JMH CAP area in PFC or better condition. Multiple ongoing efforts to achieve this goal are being undertaken throughout the field office area.

Comment:

According to supplemental draft EIS, the vast majority of riparian areas and wetlands on the Jack Morrow Hills are not in proper functioning condition. Based on the critical importance of these areas, we urge BLM to use this planning process to adopt specific, measurable riparian and wetland area protections.

Response:

Specific actions designed to protect and enhance riparian and wetland areas have been adopted and are stated in Chapter 2 of the supplemental draft EIS. Some of these actions include CSU in riparian/wetland areas; rights-of-way (ROW) avoidance; 500-foot avoidance zones around these areas for surface disturbing activities (except for those actions that are for the benefit of this resource); maintenance of riparian exclosures; implementation of the "Wyoming Standards for Healthy Rangelands."

As discussed in Section 2.2.1.1 of the supplemental draft EIS, riparian areas would be managed to attain PFC through whichever action is necessary as determined in site-specific plans and actions (e.g., Allotment Management Plans [AMP] and Herd Management Plans [HMP], livestock grazing vegetative use levels, and grazing timing and intensity).

Comment:

The supplemental draft EIS for the JMHCAP is missing several relevant pieces of information without explanation. For example, there is little data on surface water quality, none on ground water quality, and none on the hydrological connection between surface water and ground water.

This information is important to any discussion of the environmental impacts of oil and gas development, both conventional and coalbed methane. The supplemental draft EIS admits that the information is lacking but contains no discussion of how difficult it might be to obtain the data. However, since the supplemental draft EIS promises future studies to gather this information (see e.g., supplemental draft EIS at 4-13), it appears that the data can be readily obtained. The failure to do so now, therefore, is improper.

Response:

Water quality is the purview of the State of Wyoming through the DEQ. Complete surface water and groundwater quality data are neither currently available nor easily attainable.

The gathering of the groundwater data in question requires knowledge of the structure and composition of the underlying geology. This information will be gathered as development occurs. Proper well drilling and completion methods and surface mitigation measures will help to minimize potential contamination of the groundwater resource during the data gathering process.

The connection between CBM aquifers and surface resources is unknown in this area. This relationship will have to be explored in detail when site-specific projects are proposed and EISs are developed.

Comment Number: 100,384

Comment:

Appendix 3 states that water depletion in the Colorado River System is likely to jeopardize existing threatened and endangered species inhabiting that habitat. The assumptions for water depletions due to oil and gas activities are flawed. Although BLM predicts that all water utilized for drilling would be derived from sources that contribute to river flows, this is not necessarily the case. It has not been scientifically determined that all potential source aquifers are connected to Colorado River System flows. The EIS or the biologic assessment should note that BLM can mitigate the impacts by assuring that

drilling water is not derived from contributing flows. Such a mitigation measure would reduce to insignificance or eliminate potential impacts to threatened and endangered species from water depletion.

Response:

All water depletions from tributaries to the Platte River and Colorado River systems are considered as adverse impacts to the endangered species in those systems. Because the exact location of the water sources to be used for drilling and completion of future wells is unknown, BLM makes the assumption, for the purpose of impact analysis, that the water will come from the drainage in which the well is located and that it will have a direct 1:1 impact on surface flows. As mentioned, this will not always be the case, particularly if the water comes from a groundwater well in an aquifer that is sufficiently deep to be "disconnected" from surface waters. When site-specific projects are proposed (whether in an EIS or individual APD), further environmental impact analysis will occur, and the specific water source and amount will be identified then. For analysis at this stage, though, these assumptions must be made.

Stipulating in the CAP that all water sources to be used for drilling purposes be from locations that are not connected to surface waters is bordering on being outside BLM jurisdiction. BLM can restrict the removal of water from sources on BLM-administered lands and can restrict ROWs if it determines that resources would be damaged and could not be mitigated, with some exceptions (such as pre-FLPMA grandfathered rights). Water rights, however, are under the jurisdiction of the State of Wyoming and not BLM. Should water use affect surface flows, the USFWS has established a mitigation fee based on the average annual amount that is consumed or "depleted" from the system that is used for species recovery.

Comment Number: 100,455

Comment:

The section in chapter 4 on impacts to groundwater is a perfect example about how the impact analysis of every section of the supplemental draft EIS is lacking. At page 4-13, the EIS discusses the impacts of oil and gas leasing and development on groundwater. However, the EIS makes no effort to incorporate and address environmental impacts from the reasonably foreseeable development scenario of wells planned for in the JMH. By extension, the EIS fails to address impacts of likely places of development in relationship to the location of waterways and what aquifers will be passed through to target formations.

Response:

The Green River RMP and this plan provide for protection of groundwater resources. Standard Stipulations applied to all developments within the BLM Rock Springs Field Office help to prevent and reduce environmental damage. The impacts to groundwater discussed on Page 4-13 would be inclusive of the reasonably foreseeable development scenario.

The RFD is an estimate. There are multiple development scenarios, and the location and concentration of surface disturbance are vital factors in determining impact estimations. However, the exact future location and number of wells is unknown at present. Therefore, the site-specific impacts to groundwater cannot be determined at the CAP level. A site-specific analysis would be conducted on drilling activities once projects are proposed, which would provide more detailed information on impacts.

Comment:

Information on coalbed methane (CBM) production is also lacking. What are the water handling methods? Where will CBM occur? How will monitoring take place? Where is data from the four existing wells?

Response:

Produced water will not be discharged onto the surface under any of the management alternatives; DEQ guidelines and regulations will be followed. The exact location of shallow gas development is unknown at present. Details regarding the exact location of wells would be included in a separate site-specific analysis, which would be conducted on drilling activities once projects are proposed. Monitoring of CBM development and production would be conducted in accordance with DEQ guidelines and regulations. Regarding existing well data, there are no CBM projects currently operating in the JMH CAP planning area. The four wells referred to are test wells, and information from these wells is available in Appendix 13.

Comment:

For all oil and gas, what is effectiveness of mitigation measures and stipulations on leases? How will surface and ground water impacts vary by different leasing alternatives (no leasing, special stipulations, NSO stipulations, etc.)? The same analysis is missing for location of all infrastructure such as pipelines, power lines, compressor facilities, etc. What about hydraulic fracturing and its impacts on groundwater resources? What about CBM and subsidence, impacts of SAR/EC on surface waters; water quantity in gpm per well as it will vary by coal seam? None of this information is provided or analyzed on its impacts to surface and groundwater within the JMH CAP planning area.

Response:

The effectiveness of any given mitigation measure or stipulation varies with condition and location. Monitoring the effectiveness of the various tools available and making adjustments as conditions dictate would be practiced.

As described in Chapter 4, Environmental Consequences, it is assumed that the level of impact from mineral development would vary by the amount of development that could potentially occur under each alternative. Therefore, alternatives that impose greater restrictions through stipulations would result in less impact.

The gathering of groundwater and geologic data and related impact analysis requires knowledge of the structure and composition of the underlying geology. This information will be gathered as development occurs. Proper well drilling and completion methods and surface mitigation measures will help to minimize potential contamination of the groundwater resource during the data gathering process.

Handling and disposal of produced water will meet DEQ guidelines. There are no planned surface discharges. Injection zones will need to meet DEQ approval and be of equal or lower water quality. The potential effects of hydrologic fracturing are unknown at present resulting from a lack of data for the area. The procedure of locating injection zones takes the degree of isolation and the water quality of each injection zone and is dealt with on a sight specific procedure that must be approved by the DEQ.

Comment:

The maintenance of natural hydrographic patterns and processes is crucial to maintaining riparian communities. According to Ohmart (1996), "Natural floods play a vital role in the functioning and health of riparian systems" (p. 249). Thus, BLM activities with the potential to alter stream flows or retard flooding should be avoided. Riparian areas should be the focus of monitoring efforts, as these areas can become ecologically impaired before upland habitats begin to show signs of damage. Riparian areas should be a management indicator in any adaptive management strategy that is implemented for the Jack Morrow Hills.

Response:

BLM agrees that riparian health is important. Riparian areas are already identified as an indicator in the "Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the Bureau of Land Management in the State of Wyoming" (Appendix 10). These standards have been incorporated into the monitoring strategy (Appendix 17) as a resource management indicator (Tables A17-1 and A17-2). Please see Appendix 17 in the final EIS for further clarification and description of the standards and indicators.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,456

Comment:

The accompanying map shows the known locations of select waters and wetlands in the Jack Morrow Hills Area. Specifically, the map shows (1) the locations of lakes and streams as identified in the U.S. Geological Surveys Digital Line Survey (DLG) data for the area, and (2) the locations of wetlands identified in the BLM's Wetland GIS coverage for the area. These maps include a 100-foot buffer for non-perennial and a 500-foot buffer for perennial streams, lakes and ponds, as listed in the draft EIS. However, we feel much larger buffers (e.g., 1,000 to 2,500) are needed.

It should also be noted that this map does not show all water bodies and wetlands in the area. Springs and seeps are generally not shown, and there are more wetlands in the area than are depicted on the map. For the final EIS, the BLM should consult the National Wetlands Inventory, topographic maps, and other sources to ensure all water bodies and wetlands are identified and protected from development.

Response:

BLM has analyzed a larger surface disturbance avoidance area in Alt. 2 (¼ mile, which is 1,320 feet). The distance of 500 feet as a minimum standard has proven to be sufficient based on actual practice and field observations. In specific instances, based on site-specific evaluation, this distance could be increased, if needed, at the BLM's discretion. It could also be reduced if mitigation measures were in place to protect the resource or if the action would not adversely affect riparian/wetland areas or water sources. Note also that riparian/wetland areas are exclusion areas for permanent facilities unless they would benefit those resources (e.g., fences, in-stream structures).

The BLM uses the U.S. Fish and Wildlife Service National Wetlands Inventory maps as a tool for regional and local analysis. The maps included in the supplemental draft EIS are not of sufficient scale to clearly represent all the available data.

A-19.7 WILD HORSES MANAGEMENT

Comment Number: 100,095

Comment:

I support a reduction in the wild horse herd.

Response:

Under all alternatives, wild horses will be managed for the existing Appropriate Management Level (AML) of 415 to 600 animals.

Comment Number: 100,342

Comment:

The document should re-state the BLM's commitment to comply with the Agreement with the Rock Springs Grazing Association on the subject of wild horses, and present a firm timetable and BLM budget commitment for this to actually occur.

Response:

The Bureau's commitment is to accommodate the wishes of owners of unfenced fee title lands within established Herd Management Areas (HMA). No changes in this situation are proposed in the plan. The suggested statement is not necessary.

Comment Number: 100,390

Comment:

BLM must implement a strategy for controlling the growing wild horse herd and bringing the herd numbers back down to the appropriate population levels.

Response:

Such a strategy already exists in HMPs and Land Use Plans. Wild horse gathering is subject to many variables, including national and state priorities as well as funding from Congress. During fall 2003, wild horses were removed from the Great Divide Basin Herd Management Area, which includes the eastern portions of the Jack Morrow Hill Planning Area. The wild horse population is currently at the AML of 415 to 600 horses.

Comment Number: 100,391

Comment:

Horse cannot read and don't care about peoples silly rules and plans. They are going to travel wherever their particular needs of the moment take them. They are the dominant species that lives full time in the desert. As such they can be very competitive and very destructive in the pursuit of their needs; especially when their population numbers are large. The "Preferred Alternative" proposes only managing the horses in the eastern third of the JMH CAP planning area. The horses need to be managed throughout the whole JMH CAP planning area along with the rest of the desert.

Response:

It is unclear from your comment whether you are suggesting that the Wild Horse HMA be expanded to include the entire planning area as analyzed in Alternative 2, or suggesting that all horses outside the existing HMA be removed. Wild horses outside established HMAs are not "managed"; by definition, they are "excess" and are subject to removal at anytime subject to budgetary and adoption demand limitations.

Comment Number: 100,451

Comment:

The Preferred Alternative's management plan for horses, which maintains the herd level at 415-600 horses, may work in the immediate future in theory. However, in the long term this number must be lowered to the bottom of the range because by the time round-ups are scheduled and actually completed the horse numbers rise above the upper limits, and subsequent round-ups accomplish only enough to bring the numbers back to upper limits.

Response:

Whenever possible, HMAs are reduced to the low range of the AML.

A-19.8 LIVESTOCK GRAZING MANAGEMENT

Comment Numbers: 100,342; 100,343

Comment:

If areas are rested from livestock grazing, they should also be rested from grazing by horses and concentrations of large wildlife. Monitoring plan and the actual field level allotment monitoring should be conducted jointly by the BLM and permittees.

Response:

It is not feasible to provide rest from grazing by wild horses and wildlife. Keeping wild horse numbers at AMLs in the wild horse herd area will protect the resource. Wildlife numbers are managed by the WGFD. The numbers of AUMs used in the planning area by wild horses and wildlife is minor compared with livestock grazing (see Table 4-11).

For livestock grazing activities, monitoring plans will be developed jointly with operators and all parties involved are invited to participate in the monitoring efforts. The "Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the Bureau of Land Management in the State of Wyoming" also support working with grazing permittees and other interested parties. See Appendix 10 of the supplemental draft EIS.

Comment:

Guidelines for Livestock Grazing Management. The narrative at this section should provide for the flexibility to evolve with possible changes in BLM Grazing Regulations and policies on the subject of Standards and Guidelines. In addition, this narrative should state an intention to always consult with the permittee before any technical evaluation of his/her allotment is conducted by the BLM.

This plan should state a BLM commitment to the use of good quality monitoring data, not just qualitative observation, on every subject in the S & G process. We also comment that this document should preclude serious consideration of information from any "studies" of rangelands by persons or organizations that are not supportive of multiple use and not recognized as rangelands professionals.

Response:

The flexibility to evolve with possible changes in BLM grazing regulations is currently in place. If regulations change, land use plans can be updated with plan maintenance and modification actions.

It is standard operating procedure to always consult with the permittee before any technical evaluation of allotments.

The best available data is used for management determinations made under the Wyoming Standards for Healthy Rangelands review process. These data can be either qualitative or quantitative. BLM will need to evaluate all data before precluding or giving serious consideration to data in this activity plan.

Comment:

Forage Utilization Levels. We agree with the BLM's National Riparian Team on this subject when they convey, "PFC assessments identify possible stream hydrology problems only." PFC was never intended by the authors as a decision tool. It was developed as a first approximation qualitative assessment process. PFC should not be the basis for management prescriptions; it is at best a starting point for monitoring, never an "end point" for assessing riparian areas.

Response:

PFC assessments and other methodology are used to make variety of decisions. PFC is only part of the data collected that leads up to a management prescription. PFC does not determine the cause of the impact.

Comment Number: 100,343

Comment:

Vegetation Treatments: Resting one year prior to treatment and 24 months after treatment does not provide enough flexibility. A site-specific evaluation by the BLM in consultation with the permittee should determine the time necessary for rest prior to treatment and after treatment.

Response:

The various management alternatives allow for different levels of flexibility regarding rest periods for vegetation treatment areas. The Preferred Alternative provides this flexibility based on a site-specific analysis.

The standard operating procedures for vegetation treatments include a site-specific NEPA document. In addition, Appendix 8 explains that consultation is required for all range improvement projects.

Comment:

We support the flexibility allowed by guidelines to address management practices at the AMP level. Management actions to maintain or improve undesirable rangeland conditions within reasonable time frames can be determined on a site-specific basis, rather than one prescription fits all, as in the previous plan. The statement "Management actions could include" suggests that the list that follows in not all-inclusive. However, the document could be strengthened if the narrative reflected that management actions not included could be added if good science supported new practices, or if new BLM Grazing Regulations and policies on the subject of S&Gs were adopted.

Response:

This paragraph (draft EIS, page 2-10) has been modified in the final EIS to clarify that management actions could include what is listed but would not be limited to such actions.

Comment Number: 100,376

Comment:

The JMHCAP should provide a clear and binding schedule for ensuring that the three steps the grazing rules establish for determining if grazing needs to be modified are accomplished in a timely manner. For allotments that have already been assessed, provisions should be made in the JMHCAP for future assessments and determinations. The standards and guidelines are intended to be an ongoing, prominent factor in grazing management, and the Fundamentals of Rangeland Health are continuing requirements.

Response:

All allotments within the JMH CAP planning area have been assessed for rangeland condition under the "Wyoming Standards for Healthy Rangelands." A formal Standards reassessment schedule is unavailable. Regular, informal monitoring and allotment visits are standard operating procedure to ensure that allotments are meeting all terms and conditions of their use permit. If potential problems are identified, modifications to grazing use can be made at that time, and a formal Standards assessment may be conducted.

Comment:

We note, with some confusion, that the supplemental draft EIS claims that all grazing allotments on the Jack Morrow Hills "meet the standards for healthy rangelands, (supplemental draft EIS at 3-8), despite BLM's admission that "no information is available to date supporting state water quality standards for any of the allotments" (supplemental draft EIS at 3-8). Since compliance with state water quality standards is Standard #5 of the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the Bureau of Land Management in the State of Wyoming, it is unclear just how that standard can be met without any supporting data. Moreover, Standard #2 of Wyoming's standards and guidelines for Healthy Rangelands requires that: Riparian and wetland vegetation has structural, age, and species diversity characteristics of the stage of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for groundwater recharge. Since the vast majority of riparian areas and wetlands on the planning are not in proper functioning condition, it is difficult to imagine how all of the allotments on the Jack Morrow Hills are in compliance with Standard #2.

We also find this conclusion incredible given the recent determinations in the Green River Resource Management Plan (GRRMP) that at least four of the fifteen allotments (Fourth of July, Pacific Creek, Steamboat Mountain, and Sands) on the Jack Morrow Hills are category "I" (GRRMP Appendix 9-1).

Response:

This was incorrectly stated in the supplemental draft EIS and has been clarified in the final EIS. Some allotments are not meeting the "Wyoming Standards for Healthy Rangelands." Please refer to Chapter 3 of the final EIS for clarification

Comment:

The JMHCAP should adopt mandatory measures to address the impacts of grazing in riparian areas. BLM's Riparian-Wetlands Initiative acknowledged the importance of ensuring that livestock grazing is compatible with riparian habitat protection, and set an ambitious goal for the agency to achieve. It is now years past the deadline set in the Initiative. BLM has no excuse for failing now to ensure the Initiative's goals are finally achieved. This may require reducing or eliminating livestock grazing in some riparian areas.

Response:

As stated in Table 2-1, appropriate actions are implemented on allotments that are not in compliance with the "Wyoming Standards for Healthy Rangelands" (2-105). Such measures may include, but are not limited to the following: reduction of permitted AUMs, modified turnout dates, development of range improvements, shorter grazing periods, growing season rest, the use of riparian pastures and/or exclosures, implementation of forage utilization levels, and the use of livestock conversions (2-106).

BLM has implemented the RWI into its management policy. Although all goals stated in the RWI may not have been achieved to date, management actions are designed to ultimately reach those goals.

The "Wyoming Standards for Healthy Rangelands" (which include a riparian component) provide a desired condition for all rangelands within the planning area. BLM works with permittees and other interested publics to develop strategies to achieve those standards.

Comment:

Upland areas may require special livestock management in order to ensure the restoration of fragile areas and cryptobiotic soils or to protect remnant high condition/seral stage vegetation. BLM should not rely on water developments as a way to transfer grazing pressure from riparian areas to other (usually upland) areas. This approach often does not solve problems; it just moves them from ecosystems with a relatively high ability to recover due to the availability of water (riparian areas) to ecosystems with little or no ability to recover from excessive livestock grazing (uplands).

Response:

A variety of measures are used to comply with the "Wyoming Standards for Healthy Rangelands." BLM monitors upland areas and makes adjustments to livestock grazing as necessary (supplemental draft EIS, page 2-10).

Comment:

Requirements related to the Clean Water Act were mentioned above, but they bear repetition in the context of livestock grazing. BLM should ensure there is sufficient water quality monitoring relative to the impacts of livestock grazing and take concrete steps to guarantee that livestock grazing does not adversely impact water quality or impair designated beneficial uses of these waters.

BLM must collect all data necessary to evaluate and achieve compliance with water quality standards, including, in particular, standards related to TDS, ammonia, nitrogen, fecal coliform bacteria, and turbidity.

Response:

The "Wyoming Standards for Healthy Rangelands" (including a riparian component) provides a desired condition for all rangelands within the planning area. The BLM works with permittees and other interested publics to develop strategies to achieve those standards.

Water quality is the purview of the State of Wyoming through the DEQ. For its part, the BLM works to maintain healthy vegetation and soil conditions, which in turn help in the retention and filtering of water resources. Complete water quality data are unavailable and not easily attainable.

Comment:

We ask that BLM specifically address compliance with the "Comb Wash Decision" in the final EIS and the land use plan itself. National Wildlife Federation v. BLM, 140 IBLA 85 (1997): This decision not only affirmed the longstanding rule that NEPA requires the BLM to analyze the site-specific impacts of grazing, but also that it must engage in "reasoned decision-making" on the question of whether to allocate lands and associated resources to this particular use. The final EIS should include the required analysis of site-specific impacts of grazing and the required discussion of the balancing of values that will ensure grazing best meets the present and future needs of the American people. As noted above, this balancing is required so as to meet the requirement that public lands are managed on the basis of multiple use and sustained yield (see 43 U.S.C. §§ 1702(c), 1732(a)). The Comb Wash Decision held that this balancing is mandatory, and the plan should reflect that this balancing was carried out on a site-specific basis.

Response:

The JMH CAP provides a range of alternatives, which allows for the balance of land uses, including livestock grazing. Further site-specific analyses will be conducted at the permit renewal and allotment management plan stages and for future livestock grazing activity.

Comment:

BLM should determine the suitability of lands within the planning area for livestock grazing and the JMHCAP should require adjustments accordingly. There is no doubt BLM has this responsibility and authority. See 43 U.S.C. §§ 315 (grazing districts must be chiefly valuable for grazing), 315a (BLM can do "any and all things" necessary to manage grazing), 1701(a)(8) (public lands to be managed to protect environmental values), 1702(c) (multiple use management allows for areas to be deemed unsuitable for certain uses and requires consideration of relative resource values), 1712(a)-(c) (land use plans to be based on multiple use), 1712(d) (land use classifications can be modified or terminated), 1712(e) (allowing for elimination of principle or major uses), 1732(c) (revocation of permits authorized), 1752 (allowing discontinuation of grazing permits and a determination in land use plans of whether lands "remain available for domestic grazing"), 1903(b) (allowing for discontinuation of grazing pursuant to land use planning decisions). See also Public Lands Council v. Babbitt, 529 U.S. 728 (2000) (holding that allocation of forage in a land use plan pursuant to 43 C.F.R. § 4100.0-5 does not, on its face, violate the Taylor Grazing Act). Livestock grazing, like all land uses, should only occur in areas where it has been carefully determined, pursuant to the land use planning process, to be a suitable use of the land. The suitability determination should be made in the JMHCAP at two levels: (1) for the area as a whole and (2) for site-specific areas.

Particularly with respect to those lands currently under lease for oil and gas development, BLM should assess the potential conflicts between grazing and oil and gas production. Moreover, the agency should acknowledge that lease issuance may have constituted a de-facto determination that such lands are no longer chiefly valuable for grazing and should be removed from grazing districts within the planning area.

Response:

Suitability is a range management concept acknowledging that some vegetation can be inaccessible to livestock at certain times of the year if hillsides are too steep or water sources are too far away. Suitability also considers areas that are without vegetation such as bare ground or unstabilized sand dunes. The supplemental draft EIS used the best available data to estimate and disclose potential environmental impacts, as required by the NEPA. However, the planning team believes that actual grazing use, time and duration of use, and type of use is more important for study and comparison in the EIS. If problems with excessive actual use of livestock are identified, these should be addressed site specifically. The information and analysis in the supplemental draft EIS indicates that livestock grazing

use can occur in the area, and the "Wyoming Standards for Healthy Rangelands" and other management objectives can be achieved.

The potential conflicts between grazing and oil and gas production would be assessed in a site-specific analysis under NEPA when oil and gas developments are proposed.

The issuance of an oil and gas lease has no impact on livestock grazing. How, when, and to what extent the lease is developed is assessed in a site-specific analysis under NEPA when oil and gas developments are proposed.

Comment:

BLM itself notes that most allotments on the Jack Morrow Hills contain some lands "unsuitable for livestock grazing and areas suitable only for certain classes of livestock" (supplemental draft EIS at 3-7). Still, the supplemental draft EIS contains no description of lands that are or should be unsuitable, and no discussion of how or when such determinations will be made.

Response:

Data regarding the specific locations and extent of unsuitable livestock grazing areas is not available. The statement made on page 3-7 of the supplemental draft EIS was a general statement to convey that these lands exist in most allotments. The entire planning area has been determined suitable for livestock grazing (see Big Sandy Grazing EIS; Green River RMP). The unsuitable areas contained within the JMH CAP planning area are small, isolated parcels that are insignificant in size as compared with the entire planning area. This discussion has been further clarified in the final EIS.

Comment:

The supplemental draft EIS seems to suggest that determinations about the suitability of lands for livestock grazing will be deferred pending the completion or revision of allotment management plans (supplemental draft EIS at 3-8).

The document contains no schedule for preparation of AMPs or "other activity plans intended to serve as the functional equivalent of AMPs" (supplemental draft EIS at 2-11, 2-22).

Response:

It was not an intention of the supplemental draft EIS to suggest that determinations regarding the suitability of lands for livestock grazing will be deferred pending the completion or revision of AMPs.

AMPs are prepared as needed on a case-by-case basis. This need can be determined by monitoring or by the request of permittees or other users

Comment:

We note with despair that the range of alternatives for livestock management addressed in the supplemental draft EIS is woefully inadequate. With the exception of Alternative 1, all of the alternatives, including Alternative 2, assume that use of AUMs in the planning area will be similar to historic levels (supplemental draft EIS at 4-39). Apparently, nothing BLM does to improve wildlife habitat, restore riparian areas and wetlands, and ensure compliance with statewide standards and guidelines will have any impact whatsoever on the numbers of livestock in the JMH CAP planning area. The EIS should at least take the requisite "hard look" at what the impact of reducing AUMs might be on the riparian areas and other fragile resources demonstrably at risk.

Response:

The "Wyoming Standards for Healthy Rangelands" provides a desired condition for all rangelands within the planning area. BLM works with permittees and other interested public to develop strategies to achieve those standards. Appropriate actions that may be taken to meet the "Wyoming Standards for Healthy Rangelands" could include the reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, shorter grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions. Reducing AUMs is not always necessary to comply with the Standards. Other management actions can serve to reduce the impact of livestock grazing on rangeland resources and result in compliance with the Standards. The elimination of livestock grazing from all public lands in the planning area was considered in the Green River RMP EIS and the supplemental draft EIS, but it was dropped from detailed analysis in those documents (see supplemental draft EIS page 2-4).

Comment:

Alternative 1 assumes that livestock AUMs would increase to the level of permitted use. Without some demonstration that the lands on the Jack Morrow Hills have ever been grazed at that level, this is not a reasonable alternative for livestock management in this planning area.

Response:

This level is the full permitted use, which was analyzed under the Green River RMP. This was included in Alternative 1 to analyze the highest level of use that could potentially and legally occur provided that compliance with the "Wyoming Standards for Healthy Rangelands" was not jeopardized.

Comment Number: 100,379

Comment:

Do you have relatively recent AMPs for your grazing allotments? We follow several grazing allotments on another BLM Resource Area. AMPs were promised for three of them in the RMP of 15 years ago. The plans have still not been developed. The leases for those allotments contain very few specifics. We were told that everything was okay because informal agreements had been reached with permittees and to formalize them would require more monitoring. That's a problem we would welcome. The existing RMP does not state a general allocation of forage between wildlife, livestock and plant regeneration because such decisions should be site-specific. So that little detail of forage allocation is missing from the RMP, from the non-existent AMP and from the grazing lease. We sincerely hope the situation is not the same for your grazing allotments.

Response:

AMPs have been developed for all the major allotments. Additional AMPs would be developed on a case-by-case basis as needed.

Comment:

We strongly believe that systems of exclosures should be developed in All BLM Resource Areas. A system should include different and representative vegetation types and slopes, etc. We ask that you build several exclosures in the JMH with fence that can be crossed by most wildlife. We ask that these exclosures be maintained and at least several acres in size. Cages a square meter in size will not suffice. Sure, exclosures are expensive and time-consuming to build. But, as the saying goes, "They're not making any more land; we'll have to make do with what we've got. We ask that monitoring data from these exclosures be available at the Rock Springs Field Office and perhaps on the Internet. If you already

have such exclosures, please send us details of the location. If you do not have such exclosures, include in your final EIS the planned location and timeline for building and monitoring that you intend to enforce. If and when you are wise enough to withdraw all grazing leases, exclosures won't be necessary.

Response:

The use of exclosures is one the tools that may be used to facilitate monitoring healthy rangelands. The decision to develop an enclosure is addressed on a case-by-case basis. Currently, there is no plan detailing the future location or monitoring needs of exclosures.

Comment Number: 100,451

Comment:

On page 4-81, it is suggested that habitat fragmentation occurs when a "contiguous habitat is broken up (fragmented)..." This particular section goes on to describe the effects of roads on habitat. It does not address the result of fragmentation of a ranch due not to roads or oil and gas activity which are not the dominant threat to the area. The dominant threat to the area is the loss of a viable ranch. An operating ranch, with a functioning viable permit, is an asset.

The Preferred Alternative works to ensure the continued viability of our ranch. However, it would be encouraging if this were reinforced by some form of statement in the final EIS that recognized the value of an unfragmented ranch. An unfragmented ranch is devoid of weekend getaway cabins in the wild. Specifically, does the BLM consider an operating ranch, with its associated permit and scattered parcels of undeveloped land an asset and are we correct to assume that the BLM intends to continue working with us to ensure that the overall bureaucratic climate remains relatively accessible for the rancher to continue the operation?

Response:

The draft addresses only BLM-administered lands. No development projects are considered on private lands and therefore impacts, including fragmentation of private lands, would not occur.

Comment:

Section 3.2 (Heritage Resources) is of particular interest to us. Our livestock operation occurs within much of the South Pass Historic Landscape. Due to this location we have experienced how regulations impact our operation. Whether it is the location of a water tank or the route of a fence, our ranch presently deals with this landscape designation. We do not feel that any further regulation of the area would be appropriate beyond what the Preferred Alternative holds. If we are unable to develop water and build or maintain fences within this area, our operation will be put at a disadvantage compared to other areas. The restrictions, with exceptions, can work for us as they are currently suggested in the preferred alternative. However, within the South Pass Historic Landscape there occur other designations such as WSAs and Historic Trails. It is essential that these various layers of designation are contained enough so that when a project is proposed it is not subject to so great an amount of scrutiny that the project is lost to overlapping layers of regulatory burdens. For example, if a water well was proposed in the Historic Landscape, near a Historic Trail, and visible from a WSA then some accommodation must be made so that the project can move forward without dying from a collection or single issue related to the various resource concerns. In other words, we are hopeful that the Preferred Alternative is flexible enough to allow for exceptions and common sense. Livestock management is not an exact science and should therefore not be subject to extreme GIS scrutiny of the absolute proper place to locate a water development or fence.

Response:

In any situation, consideration is given to all resources and resource uses. Once all factors are analyzed, exceptions may be granted on a case-by-case basis.

Comment:

It seems rather strange that heritage resources will be exploited through interpretive signs and general signing of areas (as in signing trails - as opposed to simply letting people read a map) and in other areas locations are kept confidential to protect them (sites). Heritage resources include both Native American sites and Historic Trails. These resource concerns should be subject to no less scrutiny than a water tank. That is to say, if the location of a water tank must pass the visibility test, then the location of a site or trail should pass the identifiable test. In other words, to be consistent, the Final Plan should recognize that just as some Native American Sites are kept confidential to protect their integrity (confidentiality being an exception to signing) then the water tank should be granted an exception (that being the location will be visible from a WSA, an Historic Trail, and located within a sensitive viewshed).

Response:

Maintaining the confidentiality of specific heritage sites cannot be compared with granting a visibility exception to a water development. These are entirely different types of actions with different impact implications. Maintaining the confidentiality of heritage sites serves to protect against unauthorized collection and vandalism and has no impact on the viewshed. However, granting a visibility exception to a water development has a negative impact on the viewshed, and therefore needs to be addressed and analyzed differently.

Comment:

Specifically, the Continental Divide Trail, like some Native American sites, is simply there. It does not need to be signed, it does not need to be advertised, and it does not need to be exploited. Is it the intention of the Preferred Alternative to sign, locate, and publicize the side-route to the Continental Divide Trail? The Continental Divide Trail, as well as the Historic Trails, goes right through, or adjacent to, our private property. Most of our ground is unfenced and unsigned. We have a special relationship with these trails. It is a relationship built on mutual trust - trust that demands that our grazing permit remain viable complete with water developments, some fences, and the full compliment of AUMs and grazing seasons. If these are jeopardized then the trust is jeopardized. In turn, our property maintains its agricultural nature. We do not support signing of any trail, expansion of any WSAs, or any new WSAs.

Response:

The BLM's planning decisions only apply to BLM-administered public lands. However, the Rock Springs Field Office understands the need to work with private landowners and has done so for many years. The JMH CAP provides direction to resolve resource conflicts or mitigate any adverse impacts of resource use. An equally important purpose is to protect the long-term productivity of the public lands. The JMH CAP and the Green River RMP thus try to protect the economic and activity interests of all current users, while minimizing conflicts and maintaining basic soil, vegetation, and wildlife resources that future users will require.

In 1978 Congress designated the Continental Divide National Scenic Trail (CDT) as part of the National Trails System. National scenic trails "provide for maximum outdoor recreation potential and for the conservation and enjoyment of nationally significant scenic, historic, natural or cultural qualities of the areas through which such trails may pass." The Great Divide Basin is arguably one the toughest sections of the CDT simply because of the vast emptiness and lack of water. When BLM issued the Environmental Assessment for the Designation of the Continental Divide National Scenic Trail in 1998,

many comments suggested rerouting the trail to include the Continental Peak and Oregon Buttes area for inclusion into the trail system. People commented that this geographic area offers spectacular beauty, historical significance, wildlife values, and geological diversity compared to the location of the trail along the eastern rim of the Great Divide Basin. In the National Trails System Act, Congress approved of designating "side-trails" off the main designated trail to incorporate areas of interest such as the Continental Peak- Oregon Buttes area. The main route of the CDT is located out of the planning area. The Continental Peak side trail will not require any development because the trail will follow existing two track trails and short segments of cross-country travel appropriate for hikers and equestrian users. Signing would be addressed on a case-by-case basis and would be kept to a minimum. Use of the BLM-managed CDT in Wyoming is estimated as 20 to 40 through-hikers per year. BLM does not anticipate that use along the side-trail would be high, but the Continental Peak side trail certainly meets the standards that Congress set within the National Trails System Act.

Comment:

We suggest the management objective LVSTK-7 be changed to read, "Requests for conversions...available forage. Consideration will be given to the operators as to what type of livestock is most consistent with present or future operation needs." It is necessary to include this change because requests for conversions can be delayed by environmental considerations that appear to have no end at times, and have the potential to cause economic harm to operators. Economic harm thrust upon a livestock operator is not necessarily conducive to long-term stability of an operation and by extension long term viability of a landscape.

We suggest the management objective LVSTK-15 be changed to read "Water sources may...and wildlife. Consideration will be given to the integrity and present and future needs of livestock operators." It is necessary to include this change because livestock exist in or near the vicinity of the JMH CAP planning area at many times of the year. Specifically, we are concerned that the definition of crucial winter ranges could be manipulated so as to exclude cattle from areas in the summer, which in turn shifts the entire area into a defacto winter feed ground. Parts of the area are most certainly winter territory for livestock and wildlife. The importance being that the two are capable of existing in the same area at the same time - with water developments.

We suggest the management objective WH-8 be changed from "Fencing in..." to "Fencing in or out..." It is necessary to include this change because there exist areas where cattle bear the brunt of the horse use. In other words, moving the cattle to lessen the pressure on certain areas proves little due to the immediate influx of the horses. Consequently if the horse has absolute freedom to grub the range or riparian into the dirt, and the cow pays the penalty, then there exists little incentive for the livestock operator to work at improving the range, cattle distribution...The feral horse is certainly capable of environmental damage. It makes very little sense to demand water quality standards or range standards from a livestock operator when the horse is immune to the same test.

Response:

These are actions finalized in the Green River RMP EIS that were determined to be applicable to the JMH CAP planning area.

The BLM and the Proposed JMH CAP are mandated by FLPMA to operate under the principles of multiple-use, sustained yield, and environmental integrity. These principles, although simple in theory, are obviously difficult to put into practice. Every user of the public lands naturally wants his or her particular use to predominate with little restriction or interference from other users. A major purpose of the JMH CAP is to resolve such conflicts or mitigate any adverse impacts of resource use. An equally important purpose is to protect the long-term productivity of the public lands. The JMH CAP and the

Green River RMP thus try to protect the economic and activity interests of all current users, while minimizing conflicts and maintaining basic soil, vegetation, and wildlife resources that future users will require.

All requests for livestock conversions will be considered and will have a site-specific NEPA analysis.

The "Wyoming Standards for Healthy Rangelands" applies to all uses of public land. Determining appropriate actions for uses not meeting standards is dealt with on a case-by-case basis. Appropriate actions for horses could include fencing, wild horse gathers, and water management.

Comment Number: 100,454

Comment:

Much of the area encompassed by the JMHCAP has traditionally been used as spring or fall range for livestock. The typical season of spring use has begun on May 1. Fall use has ended on December 1 concurrent with the opening of the Rock Springs Grazing Association lands and permit. Activity restrictions within the JMH designed to meet wildlife needs for critical habitat must recognize and honor these established periods of livestock grazing.

Response:

Restrictions could be increased or decreased on a case-by-case basis, depending on rangeland conditions and other resources and resource uses.

Comment:

The supplemental draft EIS states in Section 4.4.4 "Anticipated grazing use is assumed to increase over the planning period to the fully permitted active use amount under Alternative 1, but to maintain the historic use under all other alternatives." We find no basis for this distinction. While it may be correct to assume that actual use is unlikely to reach fully permitted levels, it is important to recognize the permittees ability to make such utilization so long as this can be accomplished in a manner consistent with the Standards and Guides for Healthy Rangelands.

Response:

The distinction was made only for analysis purposes to analyze different possible use scenarios. It is recognized that permittees are able to increase their AUMs to full permitted use, given that the "Wyoming Standards for Healthy Rangelands" are met. This was further clarified in the final EIS.

Comment Number: 100,455

Comment:

The BLM outlines options for brush "control," a method for destroying the natural sagebrush communities in hopes of increasing the amount of forage for livestock permittees. This practice is rather ineffective at increasing graminoids, and often has detrimental impacts on wildlife through direct habitat destruction and through habitat fragmentation. There is a prevailing belief among range managers that vegetation treatments that reduce or eliminate sagebrush stimulate a compensatory growth of forage grasses. For instance, Wamboldt and Payne (1986) found that the burning of sagebrush reduced sagebrush and increased forage. There is currently a move afoot to engage in a program of widespread sagebrush "control" through prescribed fire in order to increase edge, boost forage production for livestock, and create a patchier landscape. Proponents of this program argue that there is a need to return the landscape to its pre- settlement mosaic, which was driven by natural wildfire. However, there are absolutely no

reliable data available for the Jack Morrow Hills on pre-settlement fire frequency or the landscape pattern of fire-driven habitat mosaics. Thus, proponents of this policy have no scientific backing for a campaign of widespread sagebrush eradication that would recapitulate the ecologically disastrous efforts west-wide in the 1960s and 70s. Such a campaign could cause habitat fragmentation on a massive scale and drive the sage-grouse and other sagebrush obligate wildlife toward extinction.

Response:

Brush control is used to maintain healthy brush stands and healthy rangelands. This practice is not used to increase forage for livestock, although this may be an indirect effect. The rangeland is managed for all species, with a focus on achieving habitat mosaics and increasing biodiversity. BLM anticipates that brush control within the JMH CAP planning area would be on a small scale, with an anticipated proposed treatment up to 5,000 acres. Furthermore, any proposal to conduct brush treatment would require a site-specific NEPA analysis to determine the reason for and impacts of the project. Public comments or concerns regarding any proposed treatment would be addressed and analyzed in that analysis.

Comment:

Throughout the entire supplemental draft EIS, there is no mention of, much less evaluation and analysis of alternatives for, biological soil crusts. Although little known in the Jack Morrow Hills area, biological soil crusts (also known as cryptobiotic or cryptogamic soils) are a critically important component of soil systems in arid shrub steppe ecosystems. Biological soil crusts typically consist of complex communities of bacteria, blue-green algae, microfungi, green algae, mosses and other bryophytes, and lichens (Belnap et al. 2001). Fungal hyphae can be important components of biological soil crusts (States et al. 2001). Wyoming biological soil crusts in several sites were found to be dominated by lichens (States and Christensen 2001).

Thus, the widespread destruction of biological soil crusts can have long-term impacts on soil and plant productivity, and the BLM must incorporate into its land management directives standards that prevent these impacts from occurring. The supplemental draft EIS does not so much as mention biological soil crusts, despite their importance to soils and vegetation communities in sagebrush steppe and desert habitats. A comprehensive survey of soil crusts should be performed throughout the area and presented in the "Affected Environment" section of the final EIS. In addition, standards must be drawn up to foster the maintenance and recovery of biological soil crusts.

Sensitivity to disturbance makes biological soil crusts an excellent indicator of environmental degradation. According to Belnap et al. (2001), biological soil crusts are good indicators of long-term environmental condition, because they are influenced little by short-term climate factors. Moss and lichen cover can be visually estimated, but the amount of cyanobacteria and/or blue-green algae cannot be quantified through visual measurements (Belnap 1993). The BLM should protect a series of relatively undisturbed relict sites as a rangeland reference (after Belnap et al. 2001), and use these to measure departure of rangeland health from an undisturbed state. We recommend standardized survey methods (after Rosentreter and Eldridge 2002) be used to monitor biological soil crusts at least at a coarse scale within each grazing allotment, with permanent fixed-area plots established and exclosure areas providing controls at each site. Thus, if adaptive management strategies are employed in the JMH CAP, biological soil crusts should be an indicator, with firm threshold levels that trigger remedial measures established and presented in the Plan.

Response:

The "Wyoming Standards for Healthy Rangelands" provides a desired condition for all rangelands within the planning area. BLM works with permittees and other interested public to develop strategies to achieve those standards. Soil microorganisms, along with water infiltration, soil compaction, erosion,

vegetative cover, and bare ground and litter is an indicator that is used to assess Standard #1. It is understood that these biological soil crusts are important to vegetation and soil health and have therefore been incorporated in the "Wyoming Standards for Healthy Rangelands." Furthermore, the "Wyoming Standards for Healthy Rangelands" has been incorporated into the monitoring strategy (Appendix 17) as a resource management indicator (Tables A17-1 and A17-2). Please see Appendix 17 in the final EIS for further clarification and description of the Standards and indicators.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 200,177

Comment:

In this Draft, oil and gas activities and domestic grazing were lumped together under "development". There is a difference in the two activities as oil and gas activities encompass are source which, once it has been extracted, is nonrenewable and at some point will come to an end. On the other hand, domestic livestock grazing utilizes a renewable resource that has been sustainable for more than 100 years and will be able to continue indefinitely.

Response:

In the supplemental draft EIS, some livestock range improvements are referred to as developments. However, it is well understood that these improvements are different from mineral developments. Although, in some cases, the term "developments" is used to describe both activities, they were not addressed or analyzed in the same manner. Please refer to Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations, for further clarification of livestock range improvements. Refer to Appendix 14, Oil and Gas Operations, for further clarification of oil and gas activities.

A-19.9 VEGETATION MANAGEMENT

Comment Number: 46

Comment:

Earlier I stated that Oil Companies that are developing leases should be seeding disturbed ground near roads and well sites. A mixture of Crested Wheat Grass, brome grass, and a clover would improve forage for wildlife as well as livestock. Similar, suitable native species could be used but Crested Wheat is the most successful grass in the area. Wild Horses are not native so some grasses that are not native could be seeded to feed the horses. Seeding the crested wheat far from the endangered plant species is recommended and should be a categorical exclusion. Possibly the Wyoming Game And Fish could provide some funding for seeding but the developing Oil Companies should furnish performance bonds on seeding.

Response:

Seed mixtures used in reclamation efforts are approved by the BLM. Currently, it is BLM policy (BLM Manual 1745; Introduction, transplant, augmentation, and reestablishment of fish, wildlife, and plants) to use only native species in reclamation efforts whenever possible. Non-native plant species have been found to provide resources for a limited number of wildlife species. Although they provide forage for

large herbivores, many small mammals and birds are unable to make use of areas dominated by non-native plant species. Moreover, many native plant species are unable to compete with the introduced species and are therefore unable to colonize these areas. Native species provide more benefit in the long term for the resource values present in the planning area.

Comment Number: 100,358

Comment:

The supplemental draft EIS must address the effect road building and energy development will have on the spread of weeds and increase in fires and the degradation of the exceptional sage communities through potential weed infestations and/or conversion to cheat grasslands.

Response:

The effect of all surface-disturbing activities (including road building and energy development) on vegetation resources is addressed in Chapter 4, Section 4.4.5, of the supplemental draft EIS. It is anticipated that weeds will increase in the planning area and procedures are in place to mitigate the impacts to vegetative communities. Native communities within the planning area are relatively free of weeds (including Cheatgrass). Weeds occur mainly along the disturbed edges of roads where they out-compete the native species. The proponent of a project is responsible for weed monitoring and control on all roads, pipelines, well pads, communication or power lines, and any other surface disturbing activity that occurs as part of a permitted project. These areas are inspected by the BLM from initial construction through operation to final reclamation to ensure weed issues do not become problematic. After occurrence of any fire, the affected area is examined and any needed treatments are undertaken to rehabilitate the area to ensure it is restored to native vegetation. Integrated pest management techniques will aid in the reclamation of the area to ensure that any non-native species are kept under control as eradication efforts are pursued.

Comment:

The supplemental draft EIS must address how much it will cost to control weeds spread by development. You state that weeds are mainly near roads, so apparently current management is not controlling them there. How will BLM, with a marked increase in potential roads and disturbance, be able to protect the area from more significant weed and degradation problems that will come with your Preferred Alternative?

Response:

At present, few weed infestations exist other than those within or immediately adjacent to roaded and disturbed areas. Integrated pest management techniques have been effective in restricting the weeds to these small and narrow areas, which are continually being disturbed. The costs associated with weed control as a part of any developmental activity lie with the developer and are therefore not under BLM's authority to estimate. As part of regular inspections of the permitted project area, the presence of weeds is noted, and their control is undertaken by certified applicators hired by the proponent of the project. In addition, the BLM works with the county Weed and Pest District to monitor and control weeds in other sections of the planning area. See pages 4-49 to 4-50 in the supplemental draft EIS for additional discussion on surface disturbing activities and reclamation procedures.

Comment Number: 100,376

Comment:

To prevent the spread of invasive species and preserve native species and plant communities, the JMHCAP should:

- Reduce the road construction associated with oil and gas development and other surface disturbance to the minimum practicable footprint.
- Reduce grazing pressures where overuse is promoting the spread of invasive species.
- Require that any fill material used on the planning area be free of non-native seeds or other noxious weed material.
- Reduce OHV access in areas where the spread of invasion species poses a significant threat to other resources.

Response:

New techniques are minimizing the amount of disturbed area related to oil and gas surface disturbance activity associated with roads and well pads. For authorized leases, some disturbance and the company is required to monitor and treat invasive species as they occur. BLM checks for the company's adherence to this as part of the normal compliance process. If grazing is found to be a factor in the spread of invasive species, then action is taken to alleviate the problem. Currently, most of the invasive species occur along roads and some waterways where the ground is disturbed on an annual basis.

Introduction of non-native seeds is being addressed in new EAs and EISs. The cleaning of vehicles entering the area, using weed-free hay and weed-free fill, is an important aspect that BLM will be considering in future projects.

OHV access is authorized in certain areas. When weeds are found to be present in these areas, integrated pest management along with education, monitoring, and enforcement will be implemented. Unauthorized OHV use is an enforcement issue that will be part of BLM's program to limit weed spread.

Comment Number: 100,377

Comment:

In discussion of vegetation management in Chapter 2, the BLM does not consider the use of Conditions of Approval (COAs) in issuing drilling permits. COAs can be used to protect botanical resources in areas already leased for fluid mineral development:

"In cases where Federal oil and gas leases are or have been issued (1) without stipulated restrictions or requirements that are later found to be necessary; or (2) with stipulated restrictions or requirements that are later found to be insufficient; the needed restrictions or requirements may be included in approving subsequent exploration and development activities. These restrictions or requirements may only be included as reasonable measures or as conditions of approval (COA) in authorizing applications for permit to drill (APD), sundry notices, or plans of development (POD)" (from WY BLM 1990; Great Divide Resource Management Plan).

In Chapter 4, the draft EIS states that over half the JMH project area is covered by existing fluid mineral leases with no stipulations for protection of biological resources values, concluding that "... it is likely that overall adverse effects could occur if it is determined that development could continue..." (p. 4-61,

Cumulative Impacts). There is no mention of COAs for protecting resources on existing leases: Oddly, in section 2.2.5.1, Leasable Fluid Minerals Management, rare plants and vegetation types are listed as one potential resource to be considered in applying COAs during authorization of drilling permits (subject to exemption at the discretion of the authorizing officer). Direction on use of protective COAs should be added to the Vegetation Management section, 2.2.1.6.

Response:

The discussion on the use of COAs for resource and environmental protection are explained under the Fluid Mineral section on page 2-146 of the supplemental draft EIS. This includes the protection of botanical and sensitive resources on a case-by-case basis. Because COAs are part of the mineral program management, they were included in that portion of the document rather than under every affected resource. COAs are an effective tool and are being used to protect resources in the Rock Springs Field Office. Clarification on the use of COAs for protection of sensitive species under valid existing rights has been added to the impacts section of the final EIS to further clarify this issue.

Known locations of special status plant species are closed to surface disturbing activities that could affect the plants or their habitats as stated in Section 2.2.1.6 of the supplemental draft EIS. Also in the same section it states that mineral leasing would have an NSO requirement. Potential habitat may be affected as it has a CSU designation.

Comment:

Direction for protection of basin big sagebrush/lemon scurfpea stands on stabilized dunes should also be added to section 2.2.1.6. This vegetation type is mentioned in 2.2.1.1 under development of Desired Plant Community (DPC) objectives: "DPC objectives would be identified through site-specific activity and implementation plans and would focus on native plant species and their natural succession. Particular attention would be given to mountain shrub, basin big sagebrush, lemon scurfpea, aspen and other unique or important vegetation types." This is very weak direction at best. Sites with this vegetation should require at minimum NSO stipulations on new leases, and protective COAs on existing leases. Stabilized dune vegetation is addressed in Chapter 4 during analysis of impacts, and the agency acknowledges the potential for significant impact: "Constructing wells or access roads in stabilized dunes would cause direct loss of anchoring vegetation, creating active dunes that may not stabilize with natural vegetation within the planning period (20 years). One such stabilized dune community, the basin big sagebrush/lemon scurfpea association, is not known to exist elsewhere in the country to the quantity and extent that it does in the planning area. Disturbance of this plant community would likely result in the long-term loss of this unique vegetation type for the life of this plan and would therefore result in a significant impact" (p. 4-60).Similar direction is needed for other vegetation types and habitats of concern identified since the draft EIS was released, including dunes wetlands and dunes swale complexes.

Response:

The present management of the basin big sagebrush/lemon scurfpea community is based on the plant community needs and soil characteristics. Because of the effect of removal of vegetation from stabilized sand dunes, ROWs through this area have been channeled through a narrow window established for this purpose. There are also current stipulations (Appendix 5) in place for surface disturbing activities throughout much of the planning area because of the steep slopes that are present. COAs are a tool used for protection of sensitive resources, such the basin big sagebrush/lemon scurfpea community, and could be implemented on a case-by-case basis. Other restrictions such as NSO and CSU (where there is overlap with other protected resources such as big game areas and steep slopes) are in place depending on the location, amount, and type of threat.

Actions designed to protect wetland and riparian areas would serve to protect the vegetation resources in these areas. Some of these actions include CSU in riparian/wetland areas; ROW avoidance; 500-foot avoidance zone around these areas for surface disturbing activities (except for those actions that are for the benefit of this resource); maintenance of riparian exclosures; and implementation of "Wyoming Standards for Healthy Rangelands." Not included directly in this document is an ongoing effort to bring these streams into proper functioning condition through whatever action is necessary as determined in site-specific plans and actions (e.g., AMPs and HMPs, livestock grazing vegetative use levels, grazing timing and intensity).

Comment:

The description of Affected Environment with regard to botanical values is basically accurate and complete. The draft EIS identifies vegetation types and plant species of concern as of the release date of draft EIS; the agency should request an updated list and information from the WY Natural Diversity Database (WYNDD) for the final EIS and during implementation of the adaptive management strategy. With new information continually being collected, species status can change. For example, the status of Nelsons milkvetch (Astragalus nelsonii), a BLM Sensitive Species, is currently being reevaluated. Dunes wildrye (Elymus simplex var. luxurianus) was added to the state list in 1998, and was found in the JMH project area in 2000. It occurs in dune swale complexes, and is also a component of a rare vegetation type (Walt Fertig (WYNDD Botanist) 2000, in letter to Renée Dana, BLM). Also of concern are dune ponds. These fall within the desert wetland type identified as high priority for conservation by the WY Gap Analysis project. This new information also should be incorporated into analysis of impacts in Chapter 4.

Response:

The dunes ponds are protected through BLM's policy of PFC for riparian areas and policies for water quality and watershed protection. Ongoing studies will help to determine the DPC objectives for these ponds.

The Rock Springs Field Office receives all the current information available on botanical values from sources such as the WYNDD for analysis. As new information is obtained, species may be added to, or dropped from, BLM's Sensitive Species list. Nelson's milkvetch (*Astragalus nelsonii*) has been added to BLM's list and is covered in Section 3.1.5.2.2 of the supplemental draft EIS. Dunes wildrye (*Elymus simplex* var. *luxurianus*) is under consideration and has not yet been added to Wyoming BLM's Sensitive Species list. If it is added in the future, this species will be treated with the same protections as other species currently on the list.

Comment:

Analyses of impacts on vegetation and plants of concern are inadequate for two basic reasons. First, information regarding distribution is missing, and there are no analyses of areas of conflict or degree of potential threat.

Response:

Distribution information for Sensitive Plant Species has been included on Map 15 in the supplemental draft EIS. Areas of conflict can be determined by comparing maps of the various alternatives. For example, comparing Map 69 and Map 15 shows areas of conflict between fluid mineral development potential and areas where special status and/or sensitive plants are likely to occur (e.g., steep slopes or highly erodible soils).

Comment:

Because decisions are deferred to adaptive management and case-by-case consideration, it is impossible to evaluate the impacts on botanical values. Compounding the problem, the proposed adaptive management strategy is vague with few specifics.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the revised vegetation analysis in Chapter 4 and the updated version of Appendix 17 in the final EIS for details.

Comment:

This chapter suffers more than any other from lack of citations. The agency needs to provide supporting evidence for statements made regarding species viability and vegetation recovery, for example. For some of the statements made, no supporting evidence exists, as explained below.

In describing analysis methods, the BLM presents unrealistic criteria for rare plant species. "Effects to vegetation would be considered significant if the viability of protected plant species were jeopardized, with little likelihood of reestablishment after disturbance, or actions were to result in the need to list a species under the ESA." This is a general statement without concrete measures that could be used in analysis. In addition, in most cases there is insufficient knowledge to judge effects on species viability. The agency acknowledges this in its standards for surface-disturbing activities (Appendix 6). The agency also states that "... new oil and gas leases would have stipulations for protection of threatened, endangered and Wyoming BLM sensitive species." This is not a full description of the situation, as stipulations are subject to exceptions at the discretion of the Authorizing Officer, as described above.

Response:

Species viability is not in the context of "minimum viable population"; rather, it means a robust and bountiful population with enough resilience to persist in a constant environment in a state that maintains its vigor and potential for evolutionary adaptation. This viable population will not be jeopardized, meaning no action would be taken which reasonably would be expected, directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of the species by reducing reproduction, numbers, or distribution or otherwise adversely affecting the species.

New leases have a stipulation for special status species whenever these species or their habitat are located in the area. There is also a requirement for surveys of potential habitat for these species before approving any project or activity. Known locations of special status species are closed to surface disturbing activities that could adversely affect the species to protect them and their habitat. It is true that exceptions to lease stipulations may be granted by the Authorizing Officer; however, in the case of special status plants this is unlikely because of existing management objectives and actions for special status plants (as stated above), and the fact that the BLM is responsible for ensuring the management actions are consistent with the conservation needs of the species and that management does not contribute to the need to list the species.

Comment:

In 4.4.5.1, the agency relies on rangeland condition as a surrogate for plant habitat in general. "Implementation of the Wyoming Standards for Healthy Rangelands as the minimum acceptable condition for public rangelands would increase the health and diversity of vegetation communities. By ensuring that all activities conducted on public lands within the planning area are designed to maintain

and enhance native vegetation and promote healthy watersheds, negative impacts to plants and their habitat would be minimized to an acceptable level." The agency provides no supporting evidence for this claim, nor is any available. Range condition is not a valid indicator of healthy habitat for rare plants.

Response:

BLM's "Standards for Healthy Rangelands" (Appendix 10) provide the guidance for preparation of land use plans and are the basis for development of planning area-specific management objectives. Part of Standard #4 specifically includes special status species: "Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced." This is specifically intended to provide healthy habitats for rare plants.

Comment:

The agency briefly mentions that much of the planning area is already leased, with potential for adverse effects to vegetation due to lack of protective stipulations (p. 4-47). In order to adequately analyze impacts to special status plant species, it is necessary to determine current conditions with regard to protection and potential threats. How much known and potential habitat is within existing leases? How much is within areas open to new leases? How much is within existing and proposed protected areas? Without this information, it is impossible to begin to evaluate impacts. Some of this information is readily available from the WYNDD, in the form of element occurrence records and GIS layers for special status species. Locations can be overlain on existing leases, areas open for new leases and areas withdrawn from leasing. My quick analysis of such data showed that most populations of BLM sensitive species are on lands already leased for fluid mineral development.

Response:

As outlined on page 2-110 (Preferred Alternative), all areas of known special status plant locations would be open to mineral leasing consideration with an NSO stipulation, therefore providing protection for these species regardless of whether they are within leased areas or areas open to new leases.

Current conditions of the area relative to the location of special status plant species, existing leases, and potential development areas are displayed on maps in the supplemental draft EIS. This information, along with the overall management objectives and actions for special status plant species, which protects all populations from mineral development using closure or NSO stipulations (outlined in Section 2.2.1.6 of the supplemental draft EIS), were considered adequate for evaluation of impacts to known and future special status plant species populations.

Comment:

The last paragraph of section 4.4.5.1 (p. 4-47) includes additional strong and unsupported statements regarding rare plant habitat. "Achievement of the revegetation objectives under reclamation would replace native plant communities in the long term, providing healthy habitat for colonization and expansion of special status plant species." No supporting evidence is cited. For the species of concern in the JMH planning area, no information is available regarding restoration, colonizing ability, and other relevant topics. Revegetation programs are not designed to restore specialized rare plant habitat. The agency acknowledges elsewhere in the supplemental draft EIS that restoration is not an option for special status plant species.

"Mitigation options to avoid or reduce impacts to rare plants may be limited because of specific habitat requirements or lack of necessary biological information to make such an assessment. Most of the common techniques, such as offsite compensation or habitat restoration, have proven largely unsuccessful ... because of the difficulty of providing successful mitigation options, impacts to candidate plants are

considered less than significant only if no net loss of population size or habitat quality results" (Appendix 6; Standard Practices, BMPS, and Guidelines for Surface Disturbing Activities).

Response:

This portion of Section 4.4.5.1 of the supplemental draft EIS should have stated ". . . providing healthy habitat for colonization and expansion of native plant species." This change will be reflected in the final EIS.

Comment:

For the Preferred Alternative, impacts to special status plants are discussed on p. 4-61. Some management approaches are described but impacts are not at all clear. For example, special status plants are said to be avoidance areas for ROWs, and yet elsewhere it is stated that exemptions are allowed at the discretion of the Authorizing Officer if analysis shows no adverse impacts (2.7.1.6). We rarely have enough information to be able to make such evaluations, and this is in direct conflict with the agency's surface-disturbing guidelines cited above. The agency takes the same approach with lease closures and NSO stipulations. In analysis of impacts, the BLM claims that "a portion" (which portion, how much?) of habitat will be closed to surface disturbance, and yet exemptions will be considered on a case-by-case basis (2.2.5.1, p. 2-17). Clearly, there are no guarantees of protection for special status plants even in areas theoretically closed to surface disturbance.

Response:

Special status plants receive varying amounts of protection depending on their status. Federally listed endangered, threatened, proposed, and candidate species have the greatest protection under the Endangered Species Act. Wyoming BLM sensitive species, which have less protection than ESA species, are still protected so as not to cause undue harm or the need to list the species. "Avoidance" is used to prevent any destruction of the species unless no other feasible alternative is possible, and then mitigation may be applied by the authorizing officer. The BLM is still responsible for ensuring that the management actions are consistent with the conservation needs of the species and that management does not contribute to the need to list the species. The location and extent of surface disturbance restrictions are illustrated on the "Surface Disturbance and Seasonal Limitations" maps included in the supplemental draft EIS (Maps 7,16, 28, 39, and 50).

Comment:

Two types of impacts to vegetation types of concern and special status plants are missing entirely in the draft EIS. First, energy development results in the creation of new roads. These cause direct impacts to plant populations through surface disturbance, but indirect impacts due to off-road driving are more significant. In much of the planning area, it is very easy to drive off of roads, and more roads expands off-road use. No analysis regarding this potential impact is presented.

Response:

These impacts are discussed in Section 4.4.5 of the supplemental draft EIS. This discussion includes disturbance to previously undisturbed areas, weed introduction, and vegetation loss. The impacts tend to be localized and other BLM programs responsible for reclamation, weed control and enforcement work to reduce overall impacts.

Comment:

Second, it is difficult for the BLM to enforce restrictions. This is hinted at in section 4.2 (p. 4-2): "The intensity of an impact is dependent on several factors, including the potential for violation of laws or

regulations." The BLM does not have the resources to monitor compliance with protective stipulations nor to prohibit illegal off-road driving throughout the project area, for example. This needs to be factored into analysis of impacts.

Response:

These impacts are discussed in Section 4.4.5 of the supplemental draft EIS. Monitoring and enforcement within the planning area is conducted by the BLM ranger and other BLM employees on regular duties within the planning area. Illegal off-road driving is a concern that educational efforts are attempting to correct.

Comment:

None of the alternatives presented adequately and realistically provides protection for special status plant species or for vegetation types of concern, such as vegetated dunes. Most of the known populations and stands occur on lands already leased for fluid mineral development with no protective stipulations, and stipulations on any new leases are subject to exemption.

The BLM does not have the resources to enforce stipulations, nor to restrict off-road travel from existing and new roads. Coexistence of energy development and rare plant/rare vegetation protection is unrealistic. Known sites with adequate buffers should be withdrawn from fluid mineral leasing, and existing leases purchased.

Response:

Special Status Plants have NSO and avoidance criteria in the Green River RMP and they are carried forward into this document. BLM is adding new stipulations to new leases and have COAs for existing leases in which there is no other protection. Purchasing new leases is an option in certain cases but is not realistic for all the areas, as was analyzed. BLM regulations and policy requires protection of these areas as much as possible and complies with these in this plan.

Comment Number: 100,452

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS)

Comment:

A number of people have mentioned the issue of roads. A recent study by the US Geological Survey suggests that roads are in fact the major conduits for the introduction of these non-native plants or weeds. They are serious problems in some semi-arid ecosystems like in the Red Desert. What we are seeing in the Great Basin over to the west is the invasion of things like cheatgrass, a European annual weed that is able to out compete the native plants that are there. Unfortunately, it is also extremely fire-prone and now these areas are burning at very high rates on intervals of 10 to 20 years. Additionally, the native plants that live there are simply not able to survive under those conditions and so we are seeing a complete replacement of sagebrush ecosystems in semi-arid landscapes throughout the west by these non-native plants. The conduit, the source of these weeds in many cases, is the road system that is developed for energy development and access for other uses. So, my concern here is the question of risk. We have to ask the question--what is the value to society of the short-term revenue that may come from oil and gas and the short-term energy benefits, relative to the potential for the long-term loss of this whole ecosystem?

Response:

The effect of all surface disturbing activities (including road building and energy development) on vegetation resources is addressed in Chapter 4, Section 4.4.5, of the supplemental draft EIS. It is anticipated that weeds will increase in the planning area, and procedures are in place to mitigate the impacts to vegetative communities. Native communities within the planning area are relatively free of weeds (including Cheatgrass). Weeds occur mainly along the disturbed edges of roads where they have the ability to out-compete the native species. The proponent of a project is responsible for weed monitoring and control on all roads, pipelines, well pads, communication or power lines, and any other surface-disturbing activity that occurs as part of a permitted project. These areas are inspected by the BLM from initial construction through operation to final reclamation to ensure weed issues do not become problematic. Integrated Pest Management techniques will aid in the reclamation of the area to ensure that any non-native species are kept under control as eradication efforts are pursued.

Comment Number: 100,455

Comment:

According to the supplemental draft EIS, "Where needed, reseeding is a viable technique to establish a more desirable plant community" (supplemental draft EIS at A8-5). But in the case of crested wheatgrass, reseeding is a viable technique to destroy the native vegetation community and replace it with a biological desert, a monoculture of exotic grass that is poor habitat for native wildlife. The BLM has failed to perform a detailed analysis on how each alternative will impact rare and sensitive plant species and communities. In fact, beyond listing BLM Sensitive Plant Species in an appendix, there is little discussion about how individual species will fare under the various alternatives.

There is no alternative that provides the firm standards protecting native plants and plant communities that offers a strong likelihood of maintaining or recovering rare native plant species or communities. Vague references to "particular attention" to be given to important plant communities in the supplemental draft EIS are insufficient to meet NEPA requirements. In addition, the "adaptive management" approach that forms the basis of the Preferred Alternative does not identify where development activities will occur, and therefore precludes the BLM from performing the required scientific analysis of how this alternative will affect rare native plants and rare plant communities.

Response:

Seed mixtures used in reclamation efforts are approved by the BLM. Currently, it is BLM policy (BLM Manual 1745; Introduction, transplant, augmentation, and reestablishment of fish, wildlife, and plants) to use only native species in reclamation efforts whenever possible. There is no mention in the plan of the use of any non-native species, including crested wheatgrass, for any required reseeding.

Wyoming BLM Sensitive Plant Species are protected so as not to cause undue harm or the need to list the species. "Avoidance" of surface disturbing activities is used to prevent any destruction of the species unless no other feasible alternative is possible, and then mitigation may be applied by the Authorizing Officer. The BLM is still responsible for ensuring that the management actions are consistent with the conservation needs of the species and that management does not contribute to the need to list the species. The location and extent of surface disturbance restrictions are illustrated on the "Surface Disturbance and Seasonal Limitations" maps included in the supplemental draft EIS (Maps 7, 16, 28, 39, and 50).

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the revised vegetation analysis in Chapter 4 and the updated version of Appendix 17 in the final EIS for details.

Comment:

Of particular concern is the big sagebrush/lemon scurfpea community, a habitat critically important to the Steamboat Mountain elk herd and which is found nowhere else in the world in such extensive area. According to the BLM's own analysis, the rare big sagebrush/lemon scurfpea cushion plant communities found in the Jack Morrow Hills are likely to take up to 70 years to recover following disturbance (supplemental draft EIS at 4-63). Given this bleak prospect for recovery, the BLM must adopt hard-and-fast measures to protect these plant communities from development, mechanical disturbance, and prescribed fire.

Response:

The Preferred Alternative provides "no surface occupancy" and "controlled surface use" requirements for surface disturbing activities for the big sagebrush/lemon scurfpea community through protections afforded the Core Area and WSAs. Prescribed fire treatments would not be conducted in areas where basin big sagebrush/lemon scurfpea occurs.

Comment:

We are also concerned that the BLM has made no attempt to analyze the effects of the various alternatives on BLM Sensitive Plant Species, including but not limited to meadow pussytoes, Nelsons milkvetch, Paysons tansymustard, dunes wildrye, Nelsons phaecelia, and intermountain phaecelia. It is disturbing that the BLM has identified these plants as having special conservation concern due to scarcity, population decline, or likelihood to be listed under the ESA, and yet has made no attempt to quantify the populations and distributions of these species in the supplemental draft EIS, or analyze the effects of the various alternatives on these species.

Response:

Potential impacts to BLM Sensitive Plant Species are discussed in Section 4.4.5 of the supplemental draft EIS. Wyoming BLM sensitive species are protected so as not to cause undue harm or the need to list the species. "Avoidance" of surface disturbing activities is used to prevent any destruction of the species unless no other feasible alternative is possible, and then mitigation may be applied by the authorizing officer. The BLM is still responsible for ensuring that the management actions are consistent with the conservation needs of the species and that management does not contribute to the need to list the species. The location and extent of surface disturbance restrictions are illustrated on the "Surface Disturbance and Seasonal Limitations" maps included in the supplemental draft EIS (Maps 7, 16, 28, 39, and 50).

Comment:

In addition to the big sagebrush/lemon scurfpea community, a number of vegetation communities are particularly sensitive to disturbance and warrant analysis in the Affected Environment and Environmental Consequences sections of the final EIS far beyond the level of attention given them in the supplemental draft EIS.

Dunal Ponds. Dunal ponds that arise from the melting of ice-cored dunes to the west and south of Essex Mountain are incredibly important sites of biodiversity, both plant and animal. These rare desert wetlands support hydric plant communities, aquatic insect, amphibians, shorebirds, and waterfowl. The graminoid-dominated "vernal pond" wetlands in this area are rated "highest priority" for conservation by the Wyoming Gap study (USGS 1996). The dunal ponds generally are not as alkaline as other water sources in the area and are known to provide an oasis for plants and animals. Supplemental draft EIS at 3-50: "They are islands of biodiversity and deserve special protection and management."

The supplemental draft EIS makes no mention of the sensitivity of dunal pond communities (they are not marked on the Sensitive Plant Resources map – Map 15) and they receive no special protection under the plan, beyond WSA status for many, which does not protect against the most pervasive and severe impacts – those that result from cattle concentrating their grazing, waste, and trampling impacts on the edges and waters of the ponds. Currently, these ponds fall within two cattle grazing allotments (the Sands and Pacific Creek Allotments), and make up a minority proportion of each allotment. As part of the supplemental draft EIS, the BLM should restructure these allotments to exclude the dunal pond areas, and compensate the permittees with comparable grazing on less sensitive habitats elsewhere. This change should be formalized by modifying the Greater Sand Dunes ACEC to require a moratorium on livestock grazing within dunal pond areas.

Response:

The dunes ponds are protected through BLM's policy of PFC for riparian areas and policies for water quality and watershed protection. Ongoing studies will help to determine the DPC objectives for these ponds. As long as BLM continues to meet the "Wyoming Standards for Healthy Rangelands," the ponds would be protected and modifying grazing practices would not need to be considered.

Comment Number: 100,456

Comment:

Unfortunately, of all the rare plants in the study area, only two are managed as "special status" species by BLM. The remaining dozen or so rare species "are not similarly managed" and therefore are afforded no protection. This is the case primarily because the BLM State Office has not developed a list of special status species. 2000 draft EIS, page 227.

Response:

The supplemental draft EIS (Section 3.1.5.2.2) outlines the current Wyoming BLM sensitive species management policy and species within the planning area that are included on the BLM State Office Designated Sensitive Species list. Currently, three species in the planning area are managed as Wyoming BLM sensitive species. The other species in the area are tracked by the WYNDD as having some concern and may be added to the BLM sensitive species as data is accumulated by BLM and WYNDD. Input is provided by WYNDD regarding the selection of species to be added to the list. This is evidenced by the update of the list in 2002.

Comment Number: 200,209

Comment:

In several locations, the supplemental draft EIS mentions the use of prescribed burns to achieve a variety of vegetative goals. Whereas burning can be an effective tool to alter vegetation patterns, there are more desirable tools for most situations. The proper distribution and number of cattle has been shown to be an effective and long-term way to manage vegetation patterns in arid areas. The risks associated with cattle are low as compared to fire. Cattle till the soil, breaking down "caps" that often retard reproduction of desirable plant species. Cattle also fertilize the soil as they move over it. Perhaps most importantly, whereas most of the primary production removed by fire goes into the atmosphere; primary production removed by cattle goes into the human food chain and provides income for people supported by the land.

Response:

Desired vegetative conditions are achieved through a combination of methods, including appropriate levels of grazing and prescribed fire. Grazing is used as the comment states and is relied on more heavily

than fire to accomplish vegetative goals, in much of the area, is not an available tool because vegetation is too sparse.

A-19.10 WILDLIFE HABITAT MANAGEMENT

Comment Number: 18

Comment:

The wildlife are absolutely more important than mineral resource extraction. Please protect these species, from the migratory herd of antelope, to the rare desert elk population with all of your efforts. Do not allow any mineral development projects to proceed that will harm our wildlife populations. I strongly urge for a clear statement that protection of wildlife and their habitat takes precedence over all mineral development plans.

Response:

BLM manages for multiple use and the Preferred Alternative provides for a balance of resource uses in the planning area.

Comment Number: 100,057

Comment:

Please do all that you can to protect the herds of elk, moose, antelope and deer in the area, by prohibiting any new mineral or road development in the area.

Response:

BLM considered the option of closing the planning area to new leasing; however, this option was dropped from detailed analysis as described in Section 2.1.3.3 of the supplemental draft EIS.

Comment Number: 100,059

Comment:

How will any proposed plan reduce the impacts on Ferruginous hawks? This species has for too long a time been negatively impacted by all human created impacts in the desert and throughout Wyoming.

Response:

The protections afforded to raptor species are discussed on page 2-122 of the supplemental draft EIS. The seasonally restricted buffer for Ferruginous hawks is 1 mile.

Comment Number: 100,068

Comment:

Thousands of gas wells sprawl throughout this region, linked together by a growing web of service roads, giant overhead powerlines, and pipelines, which break up crucial wildlife habitat and disrupt animal behavior and migration.

Response:

Cumulative effects of fluid mineral development on wildlife are discussed in Chapter 4 of the final EIS.

Comment Number: 100,069

Comment:

Oil and gas development (including coalbed methane development) proposed for the area could render huge expanses of habitat unusable for sage-grouse. Continued livestock grazing in the planning area will also threaten sage-grouse nesting, brood-rearing and winter habitats.

Response:

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy, and have provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP and implementation of greater sage-grouse habitat management practices (Appendix 6) and the monitoring of greater sage-grouse in the planning area will be used to determine future management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Comment Number: 100,145

Comment:

A more proactive predator management would be in order, especially for all the ground nesting birds. I disagree with the sage-grouse winter concentration areas provision, as in my opinion it does little to protect the resource while setting large areas off limits to reasonable usage. A more proactive predator management policy seems to be a better bet to both restore the grouse numbers and to protect mountain plover. What is really the best and most realistic way to protect ground-nesting birds?

Response:

The best method to protect ground-nesting birds is protection and enhancement of habitat. BLM is also proposing to designate the JMH CAP planning area as a "restricted control area" for predator control. This will give the BLM more input into how and where predator control occurs. This will allow us to target species that prey on grouse and/or mountain plover if predation is determined to be a limiting factor for the birds.

Comment Number: 100,183

Comment:

Wildlife mitigation for species that are considered threatened but are also hunted by sportsmen should be analyzed with the primary mitigation method to abolish hunting before mitigation by other uses, including oil and gas development, are considered. The primary anticipated effect of hunting is the taking of wildlife, whereas the primary effect of oil and gas development is not to take wildlife.

Response:

Management of the State's nonlisted wildlife populations is within the jurisdiction of the WGFD, not the BLM. Therefore, the BLM defers to the WGFD on the effects of hunting on wildlife populations.

Comment Number: 100,232

Comment:

Your office needs to protect special status species such as sage-grouse and pygmy rabbit. Both of these species have been petitioned for listing under the ESA. The BLM must estimate impacts on the remaining populations of pygmy rabbit in all of Wyoming.

Response:

The BLM 6840 manual provides management direction for all special status species. These include species that are federally listed, proposed, or candidates for listing as endangered or threatened, BLM determined "sensitive" species, and/or state-listed. Under this direction, the BLM is required to treat species proposed for listing as threatened and endangered with the same level of protection required for listed species. BLM has increased evaluation of these species and their habitat and has provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP.

Comment Number: 100,240

Comment:

The elk population of the Steamboat elk herd is estimated to be at 1,800 to 2,000 with an objective of 500, recently increased to 1,200. Consideration of other forage users must be made based on scientific evidence that forage in the management area can support any additional increase in the herd number objective.

The BLM will need to adopt reasonable and prudent mitigation measures for proposed listing of threatened endangered species, bearing in mind the species are not listed, but proposed or under consideration.

Response:

Management of the state's nonlisted wildlife populations is within the jurisdiction of the WGFD, not the BLM. The WGFD made the decision to change the herd objective based on input from a stakeholders working group formed to evaluate the current objective for the herd. BLM participated in an advisory capacity for input on forage, grazing, and other uses. Based on the recommendations of the stakeholders working group, the WGFC increased the objective for the Steamboat elk herd to 1,200.

The BLM 6840 manual provides management direction for all special status species. These include species that are federally listed, proposed, or candidates for listing as endangered or threatened, BLM determined "sensitive" species, and/or state-listed. Under this direction, the BLM is required to treat species proposed for listing as threatened and endangered with the same level of protection required for listed species. Reasonable and prudent mitigation measures for proposed species within the planning area are detailed in the Biological Assessment (Appendix 3) of the supplemental draft EIS.

Comment Number: 100,258

Comment:

The present supplemental draft EIS is not acceptable for sage-grouse as it poorly represents the present knowledge and importance of sage-grouse as an indicator species for sagebrush steppe health. The supplemental draft EIS contains no plan for monitoring the impacts of leasing, exploration, and developing of mineral rights on sage-grouse and the Preferred Alternative is a mix of pieces from several alternatives, which are all too vague to really understand what will be done.

Response:

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy, and have provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP and implementation of greater sage-grouse habitat management practices (Appendix 6) and the monitoring of greater sage-grouse in the planning area will be used to determine future management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Comment:

Clearly the Jack Morrow Hills area has been extremely important to sage-grouse, as Robert Patterson chose part of this area for his pioneering and classic early studies on sage-grouse.

Nowhere is this importance mentioned, and an inexperienced person could conclude the area is just another piece of sagebrush steppe. Nothing could be further from the truth as this was/is the heart of the sage-grouse range in Wyoming! The proposed mitigation does not meet even minimal scientific standards.

Response:

Information on Robert Patterson's 1952 study and the historical importance of the Jack Morrow Hills region to the greater sage-grouse has been added to Chapter 3 of the final EIS.

Comment:

The data presented on sage-grouse in the supplemental draft EIS inadequately represent what is known. Patterson (1952) studied sage-grouse in the area near Farson including portions of the Jack Morrow Hills Coordinated Activity Plan (JMHCAP) area. Thus, there is some history of sage-grouse counts and other data from as early as the late 1940s for this area. Further, Heath et al. (1997) conducted research on sage-grouse in portions of this area and Lyon (2000) Investigated sage-grouse populations to the northwest near Pinedale. While the latter two studies are cited, there is no mention of Patterson's earlier work. Patterson's work indicates the sage-grouse population in this immediate area was large in the late 1940s and early 1950s. Recent work (2003) by the Wyoming Game and Fish Department suggests a 90% decline (from 3,100 + males counted in 1949 on 42 leks to 310 + males on 9 leks in 2003) in numbers of males counted in this area when compared to the findings of Patterson (1952). This is greater than for the overall decreases reported by Connelly and Braun (1997) for the entire range of sage-grouse.

Response:

Based on BLM's calculations, using Patterson (1952) data as a baseline, on the leks only within the JMH CAP planning area, the greater sage-grouse population has declined 70 percent over a 54-year period. Patterson (1952) showed 15 leks, with a total of 1,256 birds. The 2003 surveys from WGFD revealed 17 leks, with a total of 377 birds.

Comment:

In reviewing the maps (Volume 2), most of the available data that are presented are those on location of leks. There is only general knowledge about sage-grouse seasonal habitat use areas outside of the lek locations. These general data are not sufficiently precise for meaningful use, especially for winter and nesting habitat. What follows is an assessment of existing sage-grouse data for the JMHCAP and recommendations for monitoring for the four key habitat types used by sage-grouse (winter use areas, leks, nesting habitat, and brood-rearing areas):

1. Winter. Maps showing the location of sage-grouse winter use areas in the JMHCAP area are too general for use and incorrectly suggest (Table 2-2) that only very small areas of winter habitat occur. Focus should immediately be placed on locating and mapping sage-grouse winter-use areas throughout the JMHCAP area. This should have the highest priority, as over winter survival is critical to population maintenance. Maps should be prepared for both "average" or "normal" winters and severe winters which happen every 7-10 years (Hupp and Braun 1989). Once these areas are located and mapped; they should be described using standard measures for live sagebrush canopy cover, height, etc. following the approach of Connelly et al. (2000). Once identified, these areas should receive special attention (for example, designation as "Areas of Critical Environmental Concern") to reduce or prevent disturbance during winter, wild fire, and management activities that make them less useful to sage-grouse. Special attention should be given to any disturbance that reduces amount of live sagebrush, leaf surface, canopy cover, and height.

Response:

Information on BLM surveys of greater sage-grouse wintering areas has been added to Chapter 3 of the final EIS. BLM has also purchased images for a "typical" (2000/2001) winter and a winter of deep long-lasting snow (1978/1979) based on all available climatic data for the Rock Springs Field Office and BLM will be examining the images to determine areas of sagebrush available to the grouse during winters of typical and deep snow. BLM also worked with the WGFD using data from an additional effort using vegetation measurements based on a refined vegetation map, winter locations, the Wyoming Observation System, Patterson's study and the information on pronghorn antelope wintering areas to determine an area of winter range for greater sage-grouse (Map 17).

Comment:

2. Leks. The available data (Vol. 2, maps) for leks suggest that not all active lek sites have been located and that the status (active, inactive < 2 years, > 2years) of each site mapped is poorly known. The long-term trend in numbers of cocks is known to be markedly down. No mention is made of this information and it should be included.

Since active sage-grouse leks are relatively easy to locate during late March and April, standard surveys of all areas within the project area should be conducted in April 2004 and continuing at 3-year intervals. All known lek sites should be checked for activity in spring 2004. Those classified as active should be counted (number of cocks) 3-4 times each spring at 7-10 day intervals starting in late March-early April, depending upon weather conditions, and continuing into early May. Those classified as inactive should be checked in late April or early May every 2-3 years to ascertain any change in status. UTM (or GIS) coordinates for all lek sites should be taken and plotted on base maps.

Response:

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy and has provided a habitat approach to managing greater sage-grouse in the Proposed JMH CAP and implementing greater sage-grouse habitat management practices (Appendix 6). The monitoring of greater sage-grouse in the planning area will be used to identify future management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Comment:

3. Nesting. Adequate data on areas used for sage-grouse nesting in the JMHCAP area does not exist outside of unpublished, preliminary reports. Because sage-grouse have been shown to nest at a variety of

distances from active leks and use a variety of micro sites for nest placement, it is difficult to identify all nesting areas. Thus, the Connelly et al. (2000) Guidelines should be followed to offer some protection to habitats useful for nesting at distances up to 3 miles from active leks.

Since most actual nesting occurs within this distance (Braun et al. 1977) (with some nests at much greater distances), it is most reasonable to depict nesting habitat as all sagebrush areas with > 10% live canopy cover of sagebrush (primarily A. tridentate vaseyana, A. t. wyomingensis, A. nova, and A. cana depending upon location) and a healthy understory of native grasses and forbs. Since active lek sites can be located, identifying concentric areas within a three-mile radius around each lek site that will include most nesting sites is presently the only reasonable method to map and protect potential nesting areas.

Response:

The Connelly (2000) guidelines for protection of greater sage-grouse nesting areas vary according to vegetative cover and whether a population is migratory or nonmigratory. Currently, the BLM has no information about vegetative cover surrounding leks, and it is unknown whether the JMH population is migratory. BLM, in coordination with the WGFD and University of Wyoming Fish and Wildlife Cooperative, will be pursuing funding for these determinations; however, until this information is available, all greater sage-grouse nesting and early brood-rearing habitat, as determined through site-specific analysis, would be avoidance areas for surface disturbing activities under the proposed JMH CAP.

Comment:

4. Brood-Rearing. Broods, upon hatching, use areas close to the locations of successful nests and progressively move toward moist areas upon desiccation of vegetation in the uplands. No data are presented to suggest even general knowledge of where broods have been observed. These data appear to not have been mapped in relation to known sources of water (at ground level) or at riparian sites along streams, springs, etc. This should be done so that additional management consideration can be given to these areas.

Response:

Thank you for bringing this issue to BLM's attention. BLM has started recording areas of observation of hens with chicks for its records and has worked with the WGFD to identify potential greater sage-grouse lek, nesting, and early brood-rearing habitat within the planning area. This habitat would be an avoidance area for surface disturbing activities under the Proposed JMH CAP. See Appendix 6 for greater sage-grouse management practices.

Comment:

Management that should be in place includes movement of livestock to avoid degradation of plant communities in moist sites and riparian areas and fencing to allow livestock access to water only in sites where erosion and plant community degradation would not be expected or could be controlled.

Response:

BLM has six riparian exclosures within the planning area for providing and protecting this important habitat for wildlife. In addition to the existing riparian exclosures, the Proposed JMH CAP would allow for the creation of new exclosures as needed to benefit resources. It is BLM standard operating procedure to adhere to BLM "Standards for Healthy Rangelands and Guidelines for Livestock Grazing" (Appendix 10 of the supplemental draft EIS).

Comment:

No data are presented to conclusively demonstrate the health of the sage-grouse population(s) and trends in quality of the available habitats. The long-term trend in number of sage-grouse counted in this area in spring is markedly down. In addition to the already substantial coal, oil, and gas development impacts, there are the additive effects of livestock grazing, power line and road placement, ranch building placement, and management treatments of sagebrush steppe areas to improve forage for livestock. All of these factors (and many more) have cumulative effects on ecosystem health and trends in numbers of all animals that are dependent upon the sagebrush steppe. Teasing apart the specific impacts is not possible without replicated studies. What is clear is that continuing practices presently in place will not improve conditions for or knowledge about local populations of sage-grouse. They will only lead to continued decline in health of the sagebrush habitat and in the distribution (the area of useful habitat is decreasing) and abundance of sage-grouse.

Long-term monitoring efforts (20-30 years at the minimum) and research studies to tease apart impacts of mineral development and other multiple use activities are critically needed in the JMHCAP area. These efforts should focus on public lands (and include immediately adjacent private and state lands) and be funded by Federal land management agencies and the mineral industry. The cumulative effects of all human-induced practices in the sagebrush steppe on sage-grouse need to be fully evaluated and studied.

Response:

BLM agrees that additional studies should be conducted for the greater sage-grouse within the planning area to determine the health of grouse populations and trends in the quality of available habitats. BLM addresses this issue through an implementation monitoring process as outlined in Appendix 17 of the final EIS which would support management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area. Cumulative effects to the greater sage-grouse have been evaluated in Chapter 4 of the final EIS.

Comment:

Review of the supplemental draft EIS for the Jack Morrow Hills area indicates the BLM has consistently ignored and plans to continue to ignore sage-grouse needs and the scientific literature upon which developed guidelines (Braun et al. 1977, Connelly et al. 2000) to maintain sage-grouse populations are based. Most seriously, the BLM has chosen 0.25-mile or 0.50-mile distances from active leks for avoidance of or restrictions on development even though the scientific literature indicates there should be no manipulation of sagebrush habitats within 2 miles of active leks (Connelly et al. 2000). The 0.25-mile or 0.50-mile restrictions seem to have been created to justify existing practices and are not based on any reputable science. The BLM's own analysis (see Pinedale Anticline Project Draft EIS 1999: 5-34 as an example) reports that, "of leks with at least one well within a 0.25-mile radius, four times as many are inactive than active" and that "more than three times as many leks with at least one oil or gas well within a 0.50-mile radius are inactive." Oil and gas well site development as well as development of roads, power lines, etc. all cause manipulation of habitat and reduction in area useable to sage-grouse. Further, BLM's supplemental draft EIS documents for the Jack Morrow Hills CAP indicate, "exceptions for any restrictions may be granted if the activity will occur in unsuitable nesting - breeding habitat." Defining "unsuitable" appears to be left to the discretion of constantly changing project personnel.

Response:

The ¼ mile controlled surface use protection on greater sage-grouse leks is commonly used as a recommended practice by wildlife agencies in Wyoming relative to mineral development. The WGFD Greater Sage-Grouse Conservation Plan, which is based on review of multiple studies on the species,

recommends the avoidance of surface disturbance and occupancy within a ¼ mile of known active leks as part of the mineral development recommended management practices. Under the Proposed JMH CAP, all leks will maintain a ¼ mile controlled surface use prescription and all associated nesting and early brood-rearing habitat will be an avoidance area for surface disturbing activities and contains numerous stipulations to reduce impacts to birds in areas that cannot be avoided (Appendix 6).

A definition of suitable greater sage-grouse habitat has been added to Chapter 3 of the final EIS.

Comment:

As part of its mitigation guidelines and standard practices for surface disturbing activities, the Wyoming BLM has imposed a restriction on activity within 0.25 miles of leks during the 6:00 PM to 9:00 AM interval from 1 February through 15 May, which has been extended through 31 July (to benefit nesting females) within 2 miles of leks (Appendix 4). These dates provide minimal mitigation during the breeding and nesting periods as there is little monitoring of adherence to these restrictions and those in place can be modified. In actual practice, there is little protection from physical disturbance of habitats useful to sage-grouse nesting outside of the scientifically unsupported 0.25 or 0.50-mile radius from active leks. Most critically, there is little recognition of the importance of sage-grouse winter use habitat or any stipulations except to restrict surface activities in "defined" game bird winter concentration areas from 15 November to 30 April (Appendix 5) to help protect these habitats. The BLM also fails to adequately address the cumulative effects on sage-grouse of all treatments (not limited to mineral developments). It is well known that construction of roads and oil/gas wells/facilities within ¼ or ½miles of active leks (even at farther distances if visible or noise can be heard from the activity at the lek site) during the nonbreeding season may and usually will result in lek abandonment (Braun et al. 2002). These impacts can be immediate and are cumulative.

Response:

Under the Proposed JMH CAP, all leks will maintain a ¼ mile controlled surface use prescription around the lek perimeter, and all associated nesting and early brood-rearing habitat will be an avoidance area for surface disturbing activities. Greater sage-grouse winter range (Map 17), in coordination with the WGFD, has also been established and would be closed to disruptive activities from November 15 through March 15. Management practices in all greater sage-grouse habitats would be designed to limit direct loss of habitat and to prevent habitat degradation. Surface disturbing and disruptive activities would avoid these habitats.

Information regarding the importance of greater sage-grouse winter use habitat has been added to Chapter 3 of the final EIS. Cumulative effects to the greater sage-grouse have been evaluated in Chapter 4 of the final EIS.

Comment:

Nowhere is there mention of the possible negative effects of seismic or other mineral exploration activities. It appears the BLM has avoided recognition of short-term effects of trails, crushing of vegetation, and direct and indirect impacts to sage-grouse from use of large vehicles involved in these activities. Unfortunately, there apparently have been no studies on the immediate impacts of seismic or other mineral exploration activities. Until demonstrated otherwise, these activities should be considered as factors that are negative for sagebrush habitats as they provide trails for increased predator access, they fragment habitats useful to sage-grouse, they decrease live sagebrush and forbs needed by sage-grouse, and could potentially disrupt breeding activities and nesting activities. BLM should require the mineral industry to fund well-designed scientific research on the effects of seismic and other mineral exploration activities on sage-grouse and their habitats as part of the final EIS for JMHCAP.

Response:

The potential effects of mineral exploration activities on all wildlife species have been expanded in Chapter 4 of the final EIS.

Comment:

Present mitigation measures to protect sage-grouse and their habitats presented in the supplemental draft EIS documents for the JMHCAP area are minimal. Adequate protection measures for sage-grouse and their habitats are not provided in any of the alternatives considered. The BLM should endorse and follow the "Guidelines to manage sage-grouse populations and their habitats" (Connelly et al. 2000). Consideration should also be given to following the concluding comments of Braun et al. (2002) that strongly recommend that it is the responsibility of the oil and gas (mineral) industry to demonstrate their activities have no negative impacts initially, short-term, or over the long-term. Effective mitigation practices, in addition to those in the guidelines (Connelly et al. 2000), include permanent and seasonal road closures, burial and or modification of power lines, removal or modifications of fences and other structures, fertilization of sage-grouse winter ranges with nitrogen, and reduction or complete permanent elimination of other uses such as livestock grazing, especially on areas where mineral production is permitted. Mitigation should also consider those impacts that can be reasonably expected including cumulative (with other factors) effects. Full mitigation would require increasing the number (on a per unit basis) of sage-grouse in non-affected areas to equal the reduction in numbers of sage-grouse in affected areas. Research on developing methodology to enhance sagebrush habitats (to support higher densities of sage-grouse) should also be productive.

At present, the supplemental draft EIS neglects mention of the importance of monitoring the health of the sage-grouse population and its habitat. Assessment of the long-term effects of mineral leasing and development on sage-grouse and the health of the sagebrush steppe should be based on collection and analysis of population information in spring, collection and analysis of harvest information, and numbers of birds counted in selected winter habitat. Sage-grouse population statistics collected in spring are those related to number of active leks per unit of area and total number of cocks counted on a sample of randomly selected, statistically defensible accessible leks. Harvest data collection should focus on analysis of wings for changes in ratios of chicks/hen and males to females in both adult (including yearlings if not separable) and chick age classes. Once winter use areas are identified, standardized line transects should be established and annually sampled (using aircraft) following current sampling theory to estimate number of birds present. Sampling should occur immediately following fresh snowfall or during maximum snow accumulation. Changes in vegetation "quality" should be monitored at 3-5 year intervals at a statistically valid sampling rate along permanent 0.6-mile belt transects. Measurements desired include live sagebrush canopy cover, sagebrush height, and ground cover of native grasses and forbs. (This should also include measurement of residual grass height.) Modeling of the potential effects of environmental events such as drought (measured by the Palmer Drought Index) and severe winters (length of period of snow cover, depth of snow, temperature) should also be pursued.

The importance of sustained, long-term monitoring cannot be overstated. It is clear that mineral development will negatively affect sage-grouse populations (Braun 1998, Braun et al. 2002) and only the magnitude of the impacts is unknown. Lyon (2000) reached similar conclusions for the effects of gas and oil developments on sage-grouse in the Pinedale, Wyoming area. The mineral industry should fund the monitoring and long-term research needed throughout the life of their projects and the final EIS should make this a specific requirement in any new mineral development projects. This critical monitoring should continue until sage-grouse population's return to pre-disturbance levels, which could exceed 30 years. The industry has the responsibility to demonstrate their activities have no negative impacts initially, short-term, or over the long-term on the distribution and abundance of sage-grouse in areas explored and developed for mineral production.

The supplemental draft EIS (Appendix 17) proposes to use adaptive management "to remove existing lease suspensions.... and in some cases, allow new leases." Coupled with the intent to use 0.25-mile restrictions around sage-grouse leks, it is conceivable that as the sage-grouse population continues to decline (already down ~90% from late 1940s levels) as a result of the 0.25-mile minimal restriction for surface disturbance, former important habitats for sage-grouse will be leased for mineral exploration. Thus, in this case, adaptive management is a prescription for extirpation of local sage-grouse populations. If no sage-grouse use can be documented (because of inadequate habitat protection), all areas will eventually be opened to leasing under the adaptive management scenario. This is improper use of adaptive management (Walters 1986, Lancia et al. 1996).

Response:

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy and has provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP. Implementation of monitoring greater sage-grouse lek use and associated habitat within the planning area will support management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details. Appendix 6 details Greater Sage-Grouse Habitat Management Practices. These practices are based on the Wyoming Greater Sage-Grouse Conservation Plan and the Connelly Guidelines (2000).

Comment:

The BLM should adopt a policy of no surface disturbance within 3 miles of occupied leks as data clearly show negative impacts to sage-grouse at the distance of 0.25 or 0.50 miles. Further, adequate data are available to show that most female sage-grouse nest within 3 miles of active leks.

Adherence to time of use for restriction of activities from 6:00 PM through 9:00 AM during the breeding and nesting periods should be strictly monitored and enforced.

Management of mid to late summer brood-rearing areas should encourage forb regrowth while maintaining at least a 6 inch residual grass height with taller (> 24 inches in height), live sagebrush of > 15 % canopy cover in close (< 200 yards) proximity for use as escape cover.

All potential mid to late summer brood-rearing areas should be mapped based on moisture and green forb availability during the late June through late August interval. Management of mid to late summer brood-rearing areas should encourage forb regrowth while maintaining at least a 6-inch residual grass height with taller (> 24 inches in height), live sagebrush of > 15 % canopy cover in close (< 200 yards) proximity for use as escape cover.

Harvest data based on examination of sage-grouse wings collected from hunters should continue on a well-defined population basis. Statistics needed to measure responses of sage-grouse are those relating to nest success, chicks per hen, and age/gender composition.

Research should be initiated to learn if monitoring of insect abundance and forb growth would reliably predict sage-grouse chick survival.

Adaptive management should be implemented to enhance sage-grouse numbers and distribution. For example, management experiments could be used near the formerly active sage-grouse lek sites documented by Patterson (1952) to enhance conditions for sage-grouse. As progress was demonstrated, techniques used could then be improved and applied to other areas where sage-grouse numbers, as measured by lek activity, have decreased.

Habitat guidelines published by Connelly et al. (2000) should be incorporated into preparation of a "desired future condition" to be achieved to improve nest success and early chick sage-grouse survival.

Replicated long-term studies are urgently needed to understand the effects of grazing practices and habitat fragmentation on predator numbers and predation rates on sage-grouse. These studies must involve treatments and controls on a landscape basis.

Nesting areas, since they are difficult to locate at a population or subpopulation scale, should be defined as all area within 3 miles of active leks. This will provide a minimum amount of protection.

Early chick survival has been identified as a problem in Wyoming. Enhancing the forb and grass component in nesting areas (which are also early brood-rearing sites) should be a priority.

To further mitigate the impacts from the significant mineral developments that may occur in the JMHCAP area, the BLM should also designate, as part of the final EIS, multiple Areas of Critical Environmental Concern (ACECs) to protect at least 90% of sage-grouse winter use areas. The boundaries of these areas should follow the results of Recommendation # 1 (Winter) on page 2. These areas will be critical to maintaining population persistence over time.

Response:

BLM's management for greater sage-grouse habitat is discussed in the Proposed JMH CAP portion of Chapter 2, Appendix 6, and Appendix 9 of the final EIS.

BLM is collecting information about potential mid to late summer brood-rearing areas using GIS mapping and historical observations to determine their locations within the planning area.

The management suggestion for continuation of harvest data has been conveyed to WGFD because it is their jurisdiction to collect harvest data and statistics.

Comment Number: 100,327

Comment:

The decrease in carrying capacity in the JMH has not been adequately addressed. With each surface disturbance, the carrying capacity of the land decreases. I have not seen in this EIS a discussion of what that impact would be, where it would occur and when it would occur, what alternatives the BLM might consider to mitigate that impact and whether wildlife or livestock numbers would be reduced as a result.

Response:

BLM is managing for healthy habitats sufficient to sustain populations of native species. Because it is difficult to predict the nature, location, and timing of surface disturbance activities at this level of planning (Section 1.4 of the supplemental draft EIS), BLM would consider and evaluate surface disturbance activities on a case-by-case basis using site-specific analysis. BLM does have an estimate of the amount of foreseeable surface disturbance and has analyzed possible effects of this disturbance in Chapter 4 of the final EIS.

Comment Number: 100,332

Comment:

Page 2-73, Wildlife Habitat Management: These new plans should only be required where the species of interest now exists or is found during an onsite visit.

Response:

Habitat Management Plans would be developed on an as-needed basis for highly developed and disturbed areas to mitigate all wildlife habitat losses, not just those of a particular species.

Comment:

Page 2-74, Greater Sage-Grouse Leks: The RMP states that a 1/3-mile avoidance of lek would apply not a ¼to ½mile avoidance area.

Response:

Page 24 of the Green River RMP ROD (October 1997) states, "The actual area to be avoided and appropriate time frame (usually from March 1 though June 15) will be determined on a case-by-case basis (Table 2). The avoidance area size (usually within ¼ to ½ mile of the lek) may vary depending on natural topographic barriers, terrain, line of sight distance, etc. (Appendix 7)."

Comment:

Using the two-mile area around the nesting of sage grouse is a great example. Studies have been ongoing for two years at Pinedale and 2 miles is fine. What will the IDT team be able to do that everyone else cannot do? The Wyoming Sage Grouse Working Group has met and is proposing restrictions based on the best science available. How will the IDT team be able to improve on that work?

Response:

The limit to activity allowable in JMH is not known. Depending on the "best science" does not recognize the unique characteristics of the planning area. Such limits could under-restrict or over-restrict uses of other valuable resources thus resulting in the management goals not being met. Therefore, careful testing of established limits by will be performed to ensure that they are appropriate for JMH.

Comment:

Page 2-75, Mountain Plover: The mountain plover survey requirements are being studied by the USFWS and may be changed from the March 2002 guidelines. This reference here and elsewhere should state "according to current USFWS guidelines."

Response:

The USFWS has determined that the mountain plover does not warrant listing under the ESA and therefore will not be addressed further in this document. In accordance with BLM guidance, the mountain plover will be addressed as a Wyoming BLM Sensitive Species.

Comment:

Page 2-113, Habitat Management Plan: Who generates this plan? If it is the operator, it should only be where the species of interest is known to exist or is located during the on-site visit.

Response:

Habitat Management Plans are generated by the BLM in coordination with the WGFD and would be developed on an as-needed basis for highly developed and disturbed areas to mitigate all wildlife habitat losses, not just those of a particular species.

Comment:

Page 2-114, Special Status Species (Preferred Alternative): Again, all an operator should have to do is check with the appropriate agency to determine if the species is present. A search is not necessary unless the species or their habitats are known.

Response:

Searches for special status species are required only if a species or its habitat is expected to exist within the project area.

Comment:

Page 2-116, Sage-Grouse (Preferred Alternative): Remove the ½ mile and leave the ¼ mile avoidance area around leks.

Response:

The avoidance area size (usually within ¼ to ½ mile of the lek) may vary depending on natural topographic barriers, terrain, line of sight distance, etc.

Comment:

Page 3-18, Greater Sage-Grouse: States that a questionnaire from hunters of sage-grouse indicates a gradual decline in the population. Might I dare suggest stop shooting them and see if the population trend reverses?

Response:

The WGFD, not the BLM, has the jurisdiction to set hunting restrictions on all game species. Your comment has been forwarded to the WGFD.

Comment Numbers: 100,342; 100,343

Comment:

SPECIAL STATUS WILDLIFE SPECIES (Section 2.7.1.7): We disagree that the BLM has the right to any information from private surface without the written permission of the landowner, even in those situations of split-estate. All decisions about predator control should be deferred to the State of Wyoming.

Before the BLM agrees to any re-introduction program for the black-footed ferret, all private landowners affected need to be in agreement with the re-introduction program.

BLM should not undertake any analysis of introduction, or re-introduction of a species not currently residing in the area unless, and until, owners of private lands affected by the proposal have approved it. In addition, prior to any introduction or re-introduction, a recovery plan must be in place.

Response:

It is BLM standard operating procedure to contact private landowners before obtaining information about their private surface.

The U.S. Department of Agriculture Animal and Plant Health Inspection Service—Wildlife Services (APHIS-WS) is responsible for all predator damage control on public lands. This agency coordinates activities with the BLM and WGFD.

According to BLM Manual 6840, BLM is required to cooperate with any recovery or reintroduction efforts of listed species.

Introduction of species is within the jurisdiction of the WGFD and/or USFWS, not the BLM.

Comment Number: 100,350

Comment:

We need a much better inventory of Sage-Grouse Winter Concentration areas; not the spot where seen, but the area of good sage habitat required to survive the severe winter. These habitats must be preserved if the ESA designation is to be avoided.

I think there should be NSO on sage-grouse leks within 1/4 mile of the center, the CSU designation allows for the impairment of these crucial sites.

Response:

Information on BLM surveys of greater sage-grouse wintering areas has been added to Chapter 3 of the final EIS. Greater sage-grouse winter range (Map 17), in coordination with the WGFD, has also been established and would be closed to disruptive activities from November 15 through March 15.

The CSU designation is currently proposed on or within a ¼-mile of the boundary of the lek in the Proposed JMH CAP; however, management practices in these habitats would be designed to limit direct loss of habitat and to prevent habitat degradation. Surface disturbing and disruptive activities would avoid these habitats.

Comment Number: 100,373

Comment:

The northern portion of the field, along with approximately 60% of the 620,000 acre EIS area, is within a "Connectivity Area (Migration Corridor)" that ranges from six to twenty-seven miles in width. It appears that the migrating wildlife will have room to adjust to moderate activity levels within this expansive corridor. Our field's existence has had no measurable negative impact on wildlife migration since it started producing in 1962.

Response:

The BLM does not have documentation of wildlife migration patterns within the planning area before 1962; therefore, it is impossible to determine what, if any, impacts to wildlife migration have occurred from the field's existence.

Comment Number: 100,375

Comment:

The BLM shows the economic value of mineral development but they fail to show what effect this has on big game animals or the dollar value to the states economy. I am enclosing a list of what they're worth; please use this list in your next EIS to show the effect mineral and commodity users have on wildlife.

Response:

The supplemental draft EIS does evaluate the economic impacts of changes in recreational activities under each of the alternatives in Section 4.12, including changes in recreational activities with increased oil and gas development. The list provides information on "restitution" values set by the WGFD and does not represent actual expenditures in the local economy and cannot be used to estimate economic impacts for JMH.

Comment Number: 100,376

Comment:

The Preferred Alternative in the supplemental draft EIS proposes only a ¼ -mile buffer for sage-grouse leks. This buffer is inadequate. See comments of Clait E. Braun on the Great Divide Resource Management Plan (February 14, 2003) (attached to these comments). The supplemental draft EIS itself acknowledges that nearly half of the sage-grouse nesting habitat lies more than two miles beyond the radius of the strutting grounds (supplemental draft EIS at 3-18). Twenty percent occurs more than four miles from leks (supplemental draft EIS at 3-18). Moreover, "most successful nests are located beyond two miles" (supplemental draft EIS at 3-19). The Wyoming Game and Fish Department (WGFD) has recognized that existing measures to protect sage-grouse have been ineffective. WGFD comments on Draft Management Situation Analysis for the Great Divide Resource Area at 5. At the very least, BLM should await the completion of the Wyoming Greater Sage-Grouse Conservation Plan before finalizing the EIS for the Jack Morrow Hills (see supplemental draft EIS at 3-18).

Response:

BLM is evaluating data presented by the WGFD on locations of active greater sage-grouse leks and comparing it with their own; however, because of timing restrictions, this data will not be presented in the maps of the final EIS but will be used as part of the implementation monitoring for the Proposed JMH CAP.

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy and has provided a habitat approach to the management of greater sage-grouse lek, nesting, and early brood-rearing habitat in the Proposed JMH CAP that limits direct loss of habitat and prevents habitat degradation (see Appendix 6, Greater Sage-Grouse Habitat Management Practices). These habitats will also be avoidance areas for surface disturbing activities. The effects of activities within the planning area and upper Green River Basin on the greater sage-grouse have been reevaluated in Chapter 4 of the final EIS.

Information on BLM surveys of greater sage-grouse wintering areas has been added to Chapter 3 of the final EIS.

In addition, please see response to comment number 100,258 within this resource section.

Comment:

To avoid these impacts, some lands should be closed permanently to oil and gas development or protected with no surface occupancy (NSO) stipulations prohibiting any adverse impacts to surface resources. These lands include lands within ¼ mile of mountain plover nesting areas. This must include not only active nest sites but also areas that have been used for three out of the last five years. See comments of Stephen J. Dinsmore on the Great Divide Resource Management Plan (February 3, 2003) (attached to these comments). The supplemental draft EIS proposes a buffer zone of only 200 meters for plover nesting areas (supplemental draft EIS at A6-12). A buffer this size is inadequate to protect mountain plovers.

Response:

The Proposed Plan recommends a ¼ mile buffer surface disturbance avoidance area for mountain plovers from April 10 to July 10 (supplemental draft EIS, page 2-120). All mountain plover buffer references have been changed in Appendix 6 of the final EIS to reflect the Proposed JMH CAP.

Comment:

BLM must carefully evaluate the problem of habitat fragmentation and the need for maintaining the connectivity or linkage of habitats. Habitat fragmentation is strongly associated with the road building that accompanies most, if not all, traditional management activities.

Response:

The effects of habitat fragmentation on wildlife are discussed Section 4.4.6.1 of the supplemental draft EIS. Habitat fragmentation issues will be managed under Habitat Management Plans, AMPs, and the Travel Management Plan.

Comment:

Section 505 of FLMPA requires BLM to minimize all adverse impacts to environmental resources when it grants private rights-of-way across the public lands for power lines, pipelines or other infrastructure associated with oil and gas development.

The issue of the impact of power lines on birds and bats, for example, should be addressed. Violations of the Migratory Bird Treaty Act, the Bald Eagle Protection Act, and ESA must be avoided. In addition to the obvious physical barrier they pose to flying species, power lines change the "structure" of other habitats, which may create favorable conditions for some species but be unfavorable for others. For example, there is evidence that ferruginous hawks are placed in a competitive disadvantage to other raptors when power lines create perches in otherwise open habitat. Likewise, sage grouse and prairie dogs are threatened if raptors are provided hunting perches in their habitat. For these reasons, the JMHCAP should require that existing rights-of-way, with similar types of structures, be utilized to the maximum extent possible.

Response:

Under the transportation plan roads and utility corridors are to be consolidated as much as possible. Areas such as raptor nests and sage-grouse leks are already avoidance areas for roads and utilities lines.

Comment:

It is crucial that BLM identify all existing migration and other movement corridors. The land use plan must ensure that management actions authorized by BLM preserve the ecological integrity of these corridors and linkages. Big game migration routes have been widely documented, but riparian areas,

mountain ranges and ridges, and other areas serve as important linkages among habitats (and even eco-regions) that must be preserved.

Response:

Big game migration and movement corridors have been defined and are discussed in Section 3.1.6.1 of the supplemental draft EIS. The "no lease" management prescription in Area 3 of the Proposed JMH CAP fluid mineral leasing implementation strategy (Appendix 17) would assist in preserving these sensitive habitats.

Comment:

There is a lack of acknowledgement within the supplemental draft EIS of the rise in poaching that will result from the increased access and human presence authorized in the planning area. Poaching will reduce herd numbers and have impacts on the wildlife enforcement resources of WGFD. BLM should address this issue.

Response:

Currently, poaching within the planning area is not considered an issue of concern. If increased poaching were to occur as a result of increased access in the planning area, BLM would work with the WGFD to determine the best course of action to reduce the problem.

Comment:

We are concerned that the supplemental draft EIS misconstrues the importance of the current drought in its discussion of potential impacts on big game populations. Drought, severe winter weather, and other stochastic factors are part of the natural backdrop against which the impacts of human disturbance are played out. The supplemental draft EIS seems entirely too concerned about ensuring that energy development in the Jack Morrow Hills will not be "blamed" for what are really the impacts of drought or a severe winter. This is the wrong approach. Instead of attempting to insulate energy development from the impacts of stochastic events, BLM must treat these factors as cumulative. BLM cannot control the weather, it must instead reduce human disturbances sufficiently to ensure that the next drought, severe winter, late spring, or insect infestation will not decimate wildlife. BLM must set aside "reserves" against these natural disasters. Stochastic events, such as the current drought, increase the need for reduced oil and gas activity, seasonal stipulations on surface-disturbing activities, habitat rehabilitation, area closures, and other efforts to preserve habitat for wildlife.

Response:

BLM recognizes the importance of stochastic events to the viability of big game herds and factors in the effects of these events into its management of habitat. Closing a portion of the planning area (Area 3 of the Proposed JMH CAP fluid mineral leasing implementation strategy [Appendix 17]) to further fluid mineral development would assist in preserving big game sensitive habitats to maintain the viability of big game herds.

Comment:

Mountain plover nesting habitat in the planning area should receive the following protections:

- Withdrawal from operation of the General Mining Law
- Closure to coal extraction activities
- NSO stipulations on oil and gas development.
- Closure to all mechanical vegetation treatments

- OHV use on designated routes only.

Response:

Thank you for your comment. Because of the mountain plover's status as BLM Sensitive Species, BLM will continue to follow recommended mitigation guidelines for management of this species.

Comment:

To ensure the viability of sage-grouse populations, it is important to provide protection and restoration for breeding, nesting, brood-rearing, and winter habitats. To ensure that these habitats are protected, the JMHCAP should adopt the following measures:

- NSO stipulations within two miles of leks and lands within nesting or wintering areas.
- No other form of mineral extraction should be authorized within breeding, nesting, or wintering areas.
- Breeding, nesting, and winter habitats for these birds should be identified and removed from any vegetation treatments.

Response:

BLM is evaluating data presented by the WGFD on locations of active greater sage-grouse leks and comparing it with their own; however, because of timing restrictions, this data will not be presented in the maps of the final EIS, but will be used as part of implementation monitoring for the Proposed JMH CAP.

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy, and has provided a habitat approach to the management of greater sage-grouse lek, nesting, and early brood-rearing habitat in the Proposed JMH CAP that limits direct loss of habitat and prevents habitat degradation. These habitats will also be avoidance areas for surface disturbing activities. The effects of activities within the planning area and upper Green River Basin on the greater sage-grouse have been reevaluated in Chapter 4 of the final EIS. Please see Appendix 6, greater sage-grouse habitat management practices.

Information regarding BLM surveys of greater sage-grouse wintering areas has been added to Chapter 3 of the final EIS.

In addition, please see response to comment number 100,258 in this resource section.

Comment:

NWF and WWF believe the following protections should be provided for prairie dog colonies on the Jack Morrow Hills: Larger prairie dog colonies and those associated with other vulnerable species such as black-footed ferrets, mountain plovers, burrowing owls, ferruginous hawks, and swift fox should receive NSO stipulations and protection from other surface-disturbing activities.

Response:

The BLM 6840 manual provides management direction for all special status species. These include species that are federally listed, proposed or candidates for listing as endangered or threatened, BLM determined "sensitive" species, and/or state-listed. The white-tailed prairie dog is a BLM sensitive species and as such special consideration is given to their habitats when evaluating development projects.

Management prescriptions for all special status wildlife species are described in Chapter 2 of the final EIS.

Comment:

Continued decline of prairie dogs is very likely to accelerate the decline of these prairie dog associates to the point where they, too, will warrant listing, along with the black-footed ferret. Yet, according to the supplemental draft EIS, "few formal surveys and inventories of prairie dogs have been conducted in the planning area." That information is vital to BLM's obligation under NEPA to take the requisite "hard look" at the cumulative impacts of activities that may be authorized pursuant to the JMHCAP.

Response:

The current information on white-tailed prairie dogs is the best available data BLM has at this time. The white-tailed prairie dog is a Wyoming BLM sensitive species and is therefore given special management consideration (e.g., additional surveys and avoidance). Since the release of the supplemental draft EIS, we have received additional information from WGFD on the locations of significant white-tailed prairie dog colonies within and adjacent to the planning area. This information is being analyzed and verified by BLM and will be incorporated into Proposed JMH CAP implementation.

Comment:

The supplemental draft EIS refers to several studies that are underway such as the Wyoming study on desert elk and the Wyoming conservation plan for sage-grouse but provides no explanation for why this data cannot be included in the final EIS and inform the agency's decision as to the JMHCAP.

Response:

As standard scientific practice, the BLM does not use implementation procedures from draft studies or guidance in management activities. The desert elk study mentioned in Section 3.1.6.1.3 of the supplemental draft EIS and the Wyoming Greater Sage-Grouse Conservation Plan have been finalized since publishing the supplemental draft EIS and have been considered in preparation of the Proposed JMH CAP.

Comment Number: 100,379

Comment:

An HMP was promised in the 1988 RMP for "our" allotments along with others nearby. As yet no HMP has been developed either. Have you developed an HMP in the JMH? To have one would be a basic requirement if you make the mistake of allowing increased minerals development and/or continued livestock grazing.

Response:

Currently, no HMPs for the planning area have been completed. However, one will be initiated after issuance of the ROD for this document.

Comment Number: 100,390

Comment:

The elk population objective for the Steamboat Elk Herd has been 500 since 1984. The current estimated population counts show that the heard is approximately at 1,800 to 2,000 elk. The Wyoming Game and Fish Department (WGFD) recently increased the herd objective from 500 to 1,200. Increases in the herd

objective must be based on scientific evidence that forage in the management area can support the increase in the herd objective as well as other range resource users (i.e., livestock grazing, wildlife, etc.). WGFD must implement a strategy for controlling the growing elk herd and bringing the elk numbers back down to the appropriate population objective.

Response:

Please see response to comment number 200,212.

Comment:

BLM has significant flexibility in developing protective measures for BLM Sensitive Species and Wyoming Species of concern such as the sage-grouse. BLM has certain discretionary authority and should consider the effects of restrictions on the oil and gas operator as part of its adoption of reasonable and prudent mitigation measures necessary to minimize potential impacts on non-ESA listed Special Status Wildlife species.

Response:

All the alternatives in the JMH CAP have taken into consideration all listed and endangered wildlife species as they were being developed. This mandate must be followed by the BLM for all surface disturbing activities and does not pertain to only oil and gas development.

Comment:

The status of the Mountain Plover as "proposed for listing" allows for a certain amount of flexibility in developing measures protective of the species. Unless the U.S. Fish and Wildlife Service determines that the Mountain Plover should be listed under the Endangered Species Act as threatened or endangered, BLM has certain discretionary authority and should consider the effects on the oil and gas operator as part of its adoption of reasonable and prudent mitigation measures necessary to minimize the impact on the species.

Response:

The mountain plover has recently been removed from consideration under the Endangered Species Act. However, it is now on the BLM Rock Springs Sensitive Species list and will continue to be protected and considered in all planning activities in potential habitat. Impacts to the oil and gas industry are considered in the appropriate section of Chapter 4 of the final EIS.

Comment Number: 100,433

Comment:

Table 4-8 shows that, under the Preferred Alternative, so-called "sensitive resources" would be subject both to no surface occupancy stipulations and to controlled surface use stipulations.

There is no way for a reviewer of the draft EIS to know what "sensitive resources" are and which kind of stipulation would be applied to them. Page 2-66 contains the statement that "crucial habitats and other areas of sensitive or important resource values" would be open to consideration for multiple use activities under the Preferred Alternative. Map 50 purports to show the location of no surface occupancy and controlled surface use stipulations but the legend on that map does not include any reference to "sensitive resources."

Response:

"Sensitive resources" were mistakenly excluded on Map 50, Surface Disturbance and Seasonal Limitations, of the supplemental draft EIS. This error has been corrected in the final EIS. The sensitive resources subject to lease stipulations and mitigation measures for each alternative are listed in Table 4-8 and shown on Map 50. Some sensitive resource areas are small parcels scattered throughout the planning area that do not have respective names and are therefore identified as "sensitive resources." These areas are shown on Map 50.

Sensitive resources and their use in making leasing decisions are discussed in Section 2.7.6.1 of the final EIS. Furthermore, a definition of "sensitive resources" has been added to the Glossary of the final EIS.

Comment Number: 100,438

Comment:

The BLM should manage the Jack Morrow Hills Area with the idea of being able to create and maintain natural qualities that would support the reintroduction of a viable bison population.

Response:

The supplemental draft EIS supports maintenance and improvement of healthy habitats through creation of Habitat Management Plans and the "Wyoming Standards for Healthy Rangelands" (outlined in Appendix 10). The WGFD would be responsible for any bison reintroduction efforts, which would likely require eliminating cattle grazing in the planning area. However, if the grazing permittees proposed a change in livestock class to domesticated bison, the BLM would consider such a proposal. The Green River RMP provides guidance relating to changes in kind of livestock.

Comment Numbers: 100,440; 100,433

Comment:

The supplemental draft EIS states on page 4-62 that, for analysis purposes, it was assumed that the WGFD would increase its herd management objective for the Steamboat elk herd from the current level of 500 to 1200 elk. The supplemental draft EIS contains no explanation for why that was a reasonable assumption. Moreover, the supplemental draft EIS lacks any description of the fact that the elk herd has consistently exceeded the current WGFD objective, notwithstanding the existing oil and gas development in the area. In fact, the supplemental draft EIS states that it is "uncertain" how big game will react to oil and gas development (p. 4-64). If the elk are as susceptible to harm from oil and gas development as the supplemental draft EIS suggests in other places, then there should be some explanation for why the herd has exceeded by nearly two and a half times the WGFD's objective at a time when oil and gas production in Nitchie Gulch and elsewhere in the Jack Morrow Hills has occurred.

Response:

Management of the state's nonlisted wildlife populations is within the jurisdiction of the WGFD, not the BLM. As stated on page 3-16 of the supplemental draft EIS, during the preparation of the supplemental draft EIS the WGFD was reevaluating the steamboat elk herd objective and preliminary indications from that evaluation were that the objective would be increased to 1,200. Thus, an objective of 1,200 was assumed in the impact analysis on wildlife. Page 3-16 of the supplemental draft EIS also discusses the history of the steamboat elk herd objective and the current elk herd population numbers. The land area the herd now occupies has greatly increased (about six times the original acreage) since the original herd objective of 500 was determined.

The concern over effects to the elk herd from mineral development stems from projected levels of development and not the current development occurring within the planning area. At the current levels of development, there does not appear to be significant impacts on the elk population. However, results from a study completed by the University of Wyoming (Powell 2002) show that elk avoid active wells and major roads by 1.25 miles.

Comment Number: 100,448

Comment:

Evidence suggests that wildlife numbers are up, not down, which runs counter to opponents of mineral development arguments.

Response:

Some big game populations are currently higher than objectives set for the herd areas by the WGFD, whereas others (e.g., mule deer) are below current objectives. There is also evidence of an overall downward trend in other wildlife populations, such as greater sage-grouse (> 70 percent in the last 50 years) and white-tailed prairie dogs, attributed to possible environmental conditions and long-term development activities.

Comment Number: 100,451

Comment:

We are concerned that the category Big Game Winter Range as described in 2.7.1.7 contains so broad of a term in the use of prohibiting disruptive activities that future needs of our ranch will potentially be limited by some arbitrary use of disruptive, as in the presence of livestock near wildlife, that winter ranges will in effect become defacto "off-limit" areas to us.

Response:

The Glossary of the supplemental draft EIS defines "disruptive activities" as "the physical presence, sounds, and movements of people and their activities (on, below, or above the land surface) that may cause displacement, of or excessive stress to wildlife during critical life stages (breeding, nesting, birthing) or during periods of severe weather conditions." Therefore, it is unlikely that crucial winter habitat will be "off-limits" to livestock operators for grazing purposes.

Comment Number: 100,452

Comment:

(The following text is from the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS)

One of the concerns of a friend that toured coalbed methane sites located in the state was seeing was that a large amount of vegetation had grown up over a period of time and this vegetation will be able to support a large amount of wildlife or it will actually encourage wildlife growth and development. The concern that he was having is that after a few years, when these coalbed methane wells dry up, which they really just don't have a lot of life expectancy, there is going to be a huge population of wildlife that is not going to be able to be supported any longer and there is going to be large amounts of death due to starvation. And there really doesn't seem to be any addressing of this at all in the EIS.

Response:

The situation in the planning area is different from the Powder River Basin because the BLM is not anticipating any surface discharge of water as a result of coalbed gas activities. Therefore, no increase in amounts of vegetation that could ultimately result in wildlife starvation is expected.

Comment Number: 100,454

Comment:

The one component of the Preferred Alternative to which we strongly object is the direction provided regarding predator damage control. We find no justification for the proposed designation of the JMH CAP planning area as a "restricted control area" or for a change in the current allocation of responsibilities between BLM and APHIS-WS. It is the statutory duty of APHIS-WS to conduct appropriate predator control activities in the protection of livestock and wildlife. The No Action Alternative appropriately provides that APHIS-WS would determine appropriate animal damage control methods in coordination with BLM. This process has operated successfully to date and should continue. If the Preferred Alternative is adopted as written, WSGA requests that you provide us with specific reasoning and justification for this change.

Response:

Much of the planning area is under the restricted control management designation. BLM believes that expanding this designation to the entire planning area would assist in the management of the greater sage-grouse. The BLM manages predators on public lands within the planning area in close coordination with APHIS and will continue to do so.

Comment:

The Preferred Alternative recognizes an increase in the Wyoming Game and Fish herd objective for elk from 500 to 1,200. This alternative then makes an assumption that, in the "short term" there will be in excess of 1,200 head of elk. WSGA requests that the "short term" be defined as a specific number of years, not to exceed three, during which the elk population in the JMH CAP planning area will be reduced to not more than 1,200 head.

Response:

Management of the state's nonlisted wildlife populations is within the jurisdiction of the WGFD, not the BLM. The WGFD has a program in place for reduction of the Steamboat elk herd. Your comments will be forwarded to the WGFD.

Comment Number: 100,455

Comment:

The EIS contains a nonsensical statement on sensitive habitats: "Crucial winter habitat, birthing areas, nesting sites, and sensitive fisheries habitats would be maintained or improved by reducing habitat loss or alteration and applying appropriate mitigation requirements…to all activities" (JMH CAP EIS at 2-12). It is a mystery how these sensitive habitats will be "maintained or improved" as habitat loss continues (albeit at a slower pace) or new disturbances are introduced (regardless of mitigation practices).

There will in fact always be a net loss of habitat acreage and/or effectiveness when new ground-disturbing activities are introduced into a previously un-impacted area. This type of disingenuous statement on the part of the agency should be rectified in the final EIS. In addition, solid protections should be applied in

the JMH CAP that protect these sensitive areas from any habitat loss whatsoever or any activity that might require mitigation measures.

Response:

The management intent has been clarified in the final EIS. Sensitive habitats will be maintained or improved through site-specific analysis, which may use measures such as surface disturbing activity limitations, season of use limitations, and habitat improvement projects on a case-by-case basis.

Comment:

The JMH supplemental draft EIS fails to provide credible analysis on impacts to wildlife for elk: "It is generally agreed that there is no way to eliminate human presence and disturbance from the area, however once disturbance reaches a certain threshold, impacts are expected to become significant. Further study and monitoring are needed to determine what the threshold is for the planning area" (supplemental draft EIS at 4-81). And yet NEPA requires the kind of hard look that would determine such threshold levels of disturbance prior to the approval of developments. Will 30 new wells surpass this threshold? 60? 255? The BLM admits it has no idea. Until credible analyses are performed to at least estimate what level of development will exceed this critical threshold, the BLM has no business approving a management plan for the Jack Morrow Hills. In addition, the BLM simply has not performed the requisite studies to determine elk habitat use and movement patterns in the JMH CAP planning area sufficient to allow planning or adaptive management to occur.

Current information on habitat use pattern of elk occupying the JMH are inadequate to provide resource managers and industry opportunities to determine and mitigate potential effects of energy on this unique elk herd.

Response:

BLM has initiated (Spring 2003) an additional study of the elk in the Jack Morrow Hills planning area, using GPS telemetry, to address this shortfall.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

According to the supplemental draft EIS, "Two types of adverse impacts to wildlife are common to all alternatives: displacement and habitat fragmentation" (supplemental draft EIS at 4-62). This admission by the BLM points to a serious deficiency in the NEPA analysis: It is perfectly reasonable to analyze at least one alternative for which habitat fragmentation and displacement are not certain outcomes, and yet the BLM has failed to consider such an alternative. As a result, the BLM has failed to meet its obligation under NEPA to analyze a range of reasonable alternatives.

Response:

BLM analyzed the option of a maximum constrained alternative that promoted the elimination of development, production, or use of one resource for the purposes of promoting other resource values, but dropped this alternative from further analysis as described in Section 2.1.3.4 of the supplemental draft EIS.

Comment:

The BLM admits, "A lack of information exists for a wide range of wildlife species, including threatened and endangered species, within the planning area" (supplemental draft EIS at 4-62). This lack is a direct result of the BLM failure to meet NEPA requirements to take a "hard look" at impacts to wildlife. Sound baseline data is a prerequisite to such a hard look, and yet the BLM has failed to gather this data. The BLM further claims, "As activities within the area develop, additional information would be obtained through project-specific data gathering and monitoring." This response is clearly not good enough. The whole reason for undertaking an EIS is to gather sufficient information to make a reasoned and informed decision, so the agency can look before it leaps. It is absolutely appalling that the agency should recognize the black hole of wildlife baseline data in its EIS and do nothing to rectify this deficiency.

"In addition, based on the Reasonably Foreseeable oil and gas Development Scenario (RFD) and the Hydrocarbon Occurrence and Development Report (HOD) for the JMH CAP area, BLM does not anticipate a large amount of new development that would lead to unacceptable levels of adverse effects in all areas" (JMH CAP EIS at 2-4). We concur with this statement only insofar as the projected level of development in the Preferred Alternative, 205 oil and gas wells and 50 CBM wells, may not lead to unacceptable levels of adverse effects in all areas, but it is certain to lead to unacceptable levels of adverse effects in many localized areas, including some very sensitive habitats and wilderness-quality lands. What then will be the extent of the planning area, the Core Area, crucial game ranges, and other sensitive habitats, which receive "unacceptable levels of adverse impacts" under the Preferred Alternative or any other alternative? There is no way of knowing based on the supplemental draft EIS because the BLM has failed to do its job of presenting a detailed and scientifically defensible analysis of impacts.

Under the Preferred Alternative, "It is unknown whether adverse impacts would occur to Wyoming BLM sensitive species, because of the lack of information on habitat locations or requirements within the planning area. Potential habitats would require searches for the species prior to approval of any project or activity" (supplemental draft EIS at 4-87). These searches are exactly the type of information gathering that the BLM is required to perform as part of its Affected Environment Analysis, so that adverse impacts can be adequately analyzed and compared between alternatives under NEPA. The BLM's failure to gather this most basic baseline data prior to selecting an alternative is simply one more example of how the agency has failed to undertake a legally sufficient "hard look" at the resource issues at hand.

Response:

Information in the supplemental draft EIS uses the best available data at the time of preparation. Additional surveys will be conducted and information will be gathered during site-specific analysis.

Comment:

Due to the sensitivity of mule deer to disturbance on winter ranges and the crucial nature of winter range performance to maintaining healthy deep populations, mule deer winter ranges must be withdrawn from all road construction and development, particularly oil and gas development, which would increase the level of human disturbance on these winter ranges.

Response:

Sensitive habitats such as crucial winter and parturition ranges are already avoidance areas and also have seasonal restrictions placed on them. Under the transportation planning, certain roads will be closed or have restricted access to accommodate animals on crucial winter range.

Comment:

"Cumulative effects to wildlife habitat would result from surface disturbing and disruptive activities in the form of habitat fragmentation and animal displacement (short- or long-term) depending on the amount, location, and timing of activities" (supplemental draft EIS at 4-87). With this statement, the BLM outlines the information which must be presented in the EIS in order to make a meaningful analysis of cumulative impacts to wildlife. But while the BLM has presented estimates of amount (i.e., 255 gas and CBM wells with their associated roads and pipelines), there is no presentation of where any of these developments will occur, nor is there a plan or timetable as to how much development will happen how soon. Unfortunately, the public (nor, apparently, the Preparers of the supplemental draft EIS) were not given a road map delineating specific locations and sitings of wells, roads, pipeline corridors, surface mines, or other surface impacts. Thus, it is impossible to perform a cumulative impacts analysis and reach conclusions as to the population status and trends of even a single wildlife species in the JMH CAP planning area, for any of the alternatives presented.

Following the cessation of oil and gas drilling and production activities, the BLM adds that "Impacts could be long term because some habitats would not reestablish to predisturbance conditions for more than 20 years" (supplemental draft EIS at 4-87). Will such long-term impacts occur? On what scale? What will such long-term impacts translate into in terms of the populations and viability of sensitive wildlife? Under this EIS, the BLM can only speculate in the absence of even the most basic information on the level, intensity, and locations of development activities over the life of the plan.

Habitat fragmentation occurs whenever there is a change in the spatial continuity of the habitat that affects occupancy, survival or reproduction in a particular species, whether or not a net loss of habitat accompanies the spatial change (Franklin et al. 2002). Oil and gas development, with its sprawl of drilling pads, access roads, and pipelines, is the primary cause of habitat fragmentation in the sagebrush steppes of the Jack Morrow Hills area. The BLM has itself admitted, "Maintaining the integrity of the area is considered paramount to sustaining viable big game herds and other wildlife populations" (supplemental draft EIS at 3-15). For this reason, management actions that contribute to habitat fragmentation, such as continued oil and gas leasing and development, must not be authorized under the JMH CAP.

There are a number of species on the BLM Sensitive Species List, the WGFD Species Watch List, watch lists of globally imperiled and locally rare species tracked by the Wyoming Natural Diversity Database, and federally listed species under the protection of the Endangered Species Act found within the JMH CAP planning area, all of which merit special conservation concern and attention. These species are of special concern because they are currently rare, are experiencing significant declines in overall population or distribution, or both. Some are at risk of global extinction. The BLM Manual dictates that Sensitive Species should be managed at least at the protective level afforded ESA candidate species: "The protection provided by the policy for candidate species shall be used as the minimum level of protection for BLM sensitive species" (BLM Manual § 6840.06(E)). The JMH CAP must therefore include standards that guarantee the viability, and if needed, the recovery of these species. Under the supplemental draft EIS, there is no alternative which implements or even contemplates such standards.

Furthermore, WGFD (1998) has set forth recommendations for allowing habitat-disturbing activities and mitigation for these activities if allowed. Federal Candidate Species and Native Species Status 1 and 2 receive a mitigation category of "Vital," for which habitat directly limits populations and restoration may be impossible; habitat function must be maintained if habitat modification is allowed to occur. In the JMH CAP planning area, species in this category include mountain plover, common loon, bald eagle, yellow-billed cuckoo, pygmy shrew, flannelmouth sucker, and black-footed ferret. Big game habitats such as Crucial Winter and Crucial Winter Relief Ranges also receive a mitigation category of "Vital."

Response:

Protection of these species is standard operating procedure and applies to all alternatives. The mountain plover, bald eagle, Western subspecies of yellow-billed cuckoo, flannelmouth sucker, and black-footed ferret are discussed in the supplemental draft EIS Biological Assessment (Appendix 3). Bald eagle occurs in the planning area only as casual migrants. Yellow-billed cuckoo have never been documented in the planning area. Flannelmouth suckers have been documented in Pacific Creek in the past, but surveys completed by the WGFD in 2003 revealed no flannelmouth suckers in any of the tributaries (per. com. R. Keith). There are no water bodies within the planning area capable of supporting common loon. One study located a pygmy shrew in the planning area; however, little is known about their life history, habitat needs, and distribution. Information in the supplemental draft EIS used the best available data at the time of preparation. Additional surveys and information will be gathered during site-specific analysis and appropriate management applied.

Comment:

Native Species Status 3 receive a mitigation category of "High," for which WGFD recommend no net loss of habitat function through enhancement of degraded habitat when a habitat disturbing project is proposed. In the Jack Morrow Hills area, species in this category include the American bittern, Merlin, peregrine falcon, long-billed curlew, white-tailed prairie dog, Great Basin pocket mouse, and silky pocket mouse. Big game winter-yearlong ranges and parturition areas also fall under the "High" reclamation category, demanding no net loss of habitat function. Furthermore, for Endangered or Threatened Species, WGFD recommends exclusion of any habitat impacting activity. For these species, "The Commission recognizes that some wildlife or wildlife habitats are so rare, complex, and/or fragile that mitigation options are unavailable. Total exclusion of adverse impacts is all that will ensure preservation of these irreplaceable habitats" (Ibid., p. 4).

Response:

The WGFD through the State's Cooperating Agency status has had considerable input throughout the development of this plan. Additionally, site-specific project analysis will provide further consideration of measures to protect species and habitats.

Comment:

We concur wholeheartedly, and point out that FLPMA carries a legal requirement for the BLM to manage its lands in accordance with state directives such as the WGFD Mitigation Policy. According to FLPMA, Guidance and resource management plans and amendments to management framework plans shall be consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of other Federal agencies, state and local governments and Indian tribes.

43 CFR § 1610.3-2(a). Furthermore, NEPA also provides, statements shall discuss any inconsistency of a proposed action with any approved state or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

40 CFR § 1506.2(d). NEPA also requires Environmental Impact Statements to include, a discussion of "Possible conflicts between the proposed action and the objectives of federal, regional, state, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned." 40 CFR § 1502.16(c). Thus, a dual mandate exists requiring conformity between the JMH CAP and state policy, and if BLM's standards fail to meet the WGFD Mitigation Policy benchmarks, a detailed explanation must be provided.

During the planning process, BLM requirements include "ensuring that provisions for the conservation of special status species, particularly the objectives from approved recovery plans and conservation agreements, are incorporated into land use plans and subsequent activity and interdisciplinary level plans..." (BLM Manual § 6840.04(E)). And yet there is hardly a word about most of the special status species that occur in the Jack Morrow Hills area in the supplemental draft EIS. For example, under the Preferred Alternative, it is unknown whether adverse impacts would occur to Wyoming BLM sensitive species because of the lack of information on habitat locations or requirements within the planning area.

Furthermore, the BLM is required to ensure that activities on BLM lands not contribute to the need for any species to become listed as Threatened or Endangered under the Endangered Species Act (16 U.S.C. § 1536(a)(2)). And yet the alternatives the BLM contemplates in the supplemental draft EIS all push several species that are already petitioned for listing, including the sage-grouse and white-tailed prairie dog, further down the road to listing, and ultimately, extinction.

Finally, in addition to rare and declining wildlife species, there are a number of species that through game animal status or other reasons are of high importance to the public, and the JMH CAP must also maintain the viability of these species throughout the Great Divide area. It is crucially important that the JMH CAP provide for the maintenance and recovery of sage-grouse populations, because this bird is headed for the Endangered Species List if population losses continue.

To ensure the viability of sage-grouse populations, it is important to consider nesting, brood-rearing, and winter habitats (Call and Maser 1985). Connelly et al. (2000) proposed comprehensive guidelines regarding the management of sage-grouse, focused around the conservation of breeding/nesting habitat, late summer brood-rearing habitat, and wintering habitat. These guidelines should be implemented across all alternatives in the forthcoming JMH CAP, with the modification of a 3-mile NSO and no surface disturbance/vegetation treatment buffer for sage-grouse leks in order to protect the leks themselves as well as adjacent nesting habitat.

Response:

The Connelly guidelines (Connelly et al., 2000) vary according to the vegetation cover and the status of the population as migratory or not. The guidelines for nonmigratory populations recommend a 1.99-mile NSO around lek perimeters in uniform vegetation cover. The guidelines for nonmigratory populations in nonuniform cover recommend a 3.1-mile NSO around the lek. The guidelines for migratory populations recommended NSO in suitable habitat within 11.18 miles of leks.

At the writing of this document, it is unknown whether populations of greater sage-grouse in the planning area are migratory or not. Moreover, BLM has no information regarding the uniformity of the vegetation surrounding the leks. BLM is looking into designing and funding a study to make these determinations and will be coordinating this effort with the WGFD and the University of Wyoming Fish and Wildlife Cooperative. BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy. BLM has provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP and implementation of greater sage-grouse habitat management practices (Appendix 6). Monitoring of greater sage-grouse in the planning area will be used to determine future management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Comment:

Mesic meadows and surface waters are focal points of sage-grouse activity during certain times of year. Mesic sites associated with springs, seeps, and streams are critical for sage-grouse on a yearlong basis,

and assumes even greater importance as brood-rearing habitat (Autenreith et al. 1982). Call and Maser (1985) stated, "We believe that free water is an essential component of sage-grouse habitat," but noted that "sage-grouse may do well in the absence of free water where they have access to succulent vegetation" (P. 4). Oakleaf (1971) found that the presence of surface water was an important factor that increased the value of meadows as grouse rearing habitat. Thus, management for sage-grouse should include special emphasis on protecting wet meadows, springs, and seeps.

Habitat attributs have a direct effect on sage-grouse population dynamics. Connelly et al. (1991) found that nest success was higher for birds nesting below sagebrush (53%) versus other shrubs (22%), and hypothesized that avian predation was the key to nest success. In central Washington, Sveum et al. (1998) found that sagebrush cover at successful nest sites averaged 51%, and height averaged 64 cm, while at depredated nests, cover and height averaged 70% and 90 cm, respectively. Wallestad and Pyrah (1974) found that sagebrush cover exceeded 15% for all nest sites, and cover of sagebrush was positively correlated with nest success. Several studies have shown that successful nest sites have greater cover of tall grass (Gregg et al. 1994, Sveum et al. 1998). With this in mind, Holloran (1999) recommended leaving residual grass heights greater than 12 cm following removal of livestock in autumn. Thus, not only sagebrush height and density but also understory grass cover are important to maintain in sage-grouse nesting areas. The supplemental draft EIS makes no mention of protective measures or adaptive management procedures that would foster understory grass growth in crucial sage-grouse habitats; this deficiency needs to be addressed.

The BLM should manage sage-grouse brood-rearing habitat to maximize high-quality forage for chicks. The supplemental draft EIS shows grouse winter habitat as point locations, but in fact these should be mapped spatially in two dimensions, with boundaries. The BLM needs to determine whether sage-grouse in the Jack Morrow Hills are migratory or nonmigratory and map the winter habitats fully so that these crucial habitats can be placed off-limits to activities that lead to habitat degradation. The BLM must identify sage-grouse wintering habitats within the planning area and place strong measures to protect them from vegetation treatments and industrial projects.

Thus, in the Jack Morrow Hills planning area, the BLM needs to rapidly identify sage-grouse winter concentration areas and place the areas off-limits to surface disturbance and vegetation treatments.

Response:

In response to your comments regarding winter use areas by greater sage-grouse, the information in Chapter 3 of the final EIS has been changed to better reflect the work completed to date on grouse wintering areas. BLM has also purchased images for a "typical" (2000/2001) winter and a winter of deep long lasting snow (1978/1979) based on all available climatic data for the Rock Springs Field Office. BLM will be examining the images to determine areas of sagebrush available to the grouse during winters of typical and deep snow. BLM is also worked with the WGFD using data from an additional effort using vegetation measurements based on a refined vegetation map, winter locations, the Wyoming Observation System, Patterson's study and the information on pronghorn antelope wintering areas to determine an area of winter range for greater sage-grouse (Map 17).

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy and has provided a habitat approach to the management of greater sage-grouse in the Proposed JMH CAP and implementation of greater sage-grouse habitat management practices (Appendix 6). Monitoring of greater sage-grouse in the planning area will be used to determine future management changes, evaluate the effectiveness of specific practices or policies, and measure progress toward the objectives established for greater sage-grouse habitat management in the planning area.

Comment:

Because the sage-grouse is dependent on sagebrush, sagebrush treatments are likely to have major impacts on sage-grouse population viability. Call and Maser (1985) asserted that the spraying of sage-grouse nesting habitats is deleterious because it reduces nest cover from avian predators and suppresses forbs that are important in the sage-grouse diet. According to Kerley (1994), "shrub stands of 20-40% cover are needed for successful nesting and this shrub coverage should be maintained on identified breeding complexes within 3.2 km of leks" (p. 113). These percentages are typical of undisturbed sagebrush stands in the Jack Morrow Hills area. Wamboldt et al. (2002) stated: Natural or prescribed burning of sagebrush is seldom good for sage-grouse. This assessment recommends that fires within sage-grouse habitat be avoided in most cases and should be allowed only after careful study of each local situation. The evidence also indicates that habitat loss due to fire may well be the most serious of all the factors contributing to the decline of sage-grouse (p.24). Heath et al. (1997) went even farther: "Based on our results, we recommend no reduction or control of sagebrush in areas containing between 18-30% live sagebrush canopy coverage within 4.5 km of leks" (p.50).

Response:

BLM, in association with the WGFD, has determined an initial area of greater sage-grouse lek, nesting, and early brood-rearing habitat and winter range. As part of the Proposed JMH CAP management, BLM will verify this determination on a site-specific basis. If areas exist in which improvements in habitat quality are needed, BLM would consider vegetation treatments (e.g., prescribed fire) to improve greater sage-grouse habitat. Also see Appendix 6 of the final EIS, which details management practices for greater sage-grouse.

Comment:

At present we do not know the relative value of a small versus large strutting ground to the population. Therefore we should afford equal merit to all and strive to maintain the adjacent habitats, especially areas with sagebrush (Artemesia) suitable for nesting and brood-rearing (p. 563).

Response:

The Proposed JMH CAP manages all greater sage-grouse strutting grounds equally and protects adjacent habitats through avoidance of strutting, nesting, and early brood-rearing habitat.

Comment:

Call and Maser (1985) stated that spraying should not occur within the breeding complex (which they defined as within 2 miles of a lek), and should also be forbidden in known grouse winter ranges. Taking into account the negative effects of vegetation treatments on sage-grouse nesting and lekking areas, and uncertainty in the overall extent of sage-grouse nesting habitat surrounding lek sites in the JMH CAP planning area, the BLM should prohibit vegetation treatments within 3 miles of sage-grouse lek sites.

Response:

Some vegetation treatments can be beneficial to greater sage-grouse habitat (Connelly et al., 1991, Braun, pers. com.) in areas of dense and/or decadent stands of sagebrush. All decisions regarding fire in sagebrush habitats will strongly consider impacts to greater sage-grouse.

Comment:

Coal mining can impact sage-grouse populations through major local decreases in recruitment (Braun 1986). Local distribution patterns and decreases in lek use are the principal effects, with disturbance, rather than habitat loss, being the primary factor (Remington and Braun 1991). Klott (1987)

recommended that areas near sage-grouse leks be avoided for the purposes of strip mining. We concur, and ask the BLM to withdraw lands within 3 miles of a sage-grouse lek from lands suitable for surface mining under SMCRA.

Response:

At present, coal development is not reasonably foreseeable for the planning area; therefore, no impacts to greater sage-grouse leks are anticipated from coal mining activities.

Comment:

Road development can lead to lek abandonment (e.g., Braun 1986). In western Wyoming, Lyon (2000) found that for sage-grouse leks within 3 km of oil and gas developments, grouse hens successful at raising their broods selected habitats farther from roads than unsuccessful hens. This finding indicates that habitats near roads experience reduced brood survivorship. Thus, we seek a moratorium on all road-building within 3 miles of a lek site.

Response:

Lyon's (2000) work suggests that hens from disturbed leks had lower nest initiation rates and moved farther to nest than hens from undisturbed leks. "Brood survivorship" between "disturbed and undisturbed" leks is not mentioned in the study. However, brood survivorship differences for the hens from disturbed leks did show a correlation between those nesting close to the road (less success) and those nesting further from the road. All greater sage-grouse lek, nesting, and brood-rearing habitats will be avoidance areas for surface disturbing activities.

Comment:

Oil and gas development poses perhaps the greatest threat to sage-grouse viability in the region. In a study near Pinedale, sage-grouse from disturbed leks where gas development occurred within 3 km of the lek site showed lower nesting rates, traveled farther to nest, and selected greater shrub cover than grouse from undisturbed leks (Lyon 2000). Lyon found that impacts of oil and gas development to sage-grouse include (1) direct habitat loss from new construction, (2) increased human activity and pumping noise causing displacement, (3) increased legal and illegal harvest, (4) direct mortality associated with reserve pits, and (5) lowered water tables resulting in herbaceous vegetation loss.

In addition, pump noise from oil and gas development may reduce the effective range of grouse vocalizations (Klott 1987). Thus, lek buffers are needed to ensure that booming sage-grouse are audible to conspecifics during the breeding season. Connelly et al. (2000) recommended, "Energy-related facilities should be located >3.2 km form active leks" (p. 278). But Clait Braun (pers. comm.), the world's most eminent expert on sage-grouse, recommended even larger NSO buffers of 3 miles from lek sites, based on the uncertainty of protecting sage-grouse nesting habitat with smaller buffers. Thus, areas within 3 miles of a sage-grouse lek should be put under year-round "No Surface Occupancy" stipulations. This measure, necessary to protect the viability of sage-grouse in the planning area, is not even considered in any of the alternatives in the supplemental draft EIS.

Response:

The ¼-mile controlled surface use protection on greater sage-grouse leks is commonly used as a recommended practice by wildlife agencies in Wyoming relative to mineral development. The WGFD Greater Sage-Grouse Conservation Plan, which is based on review of multiple studies on the species, recommends the avoidance of surface disturbance and occupancy within a ¼ mile of known active leks as part of the mineral development recommended management practices. Under the Proposed JMH CAP, all

leks will maintain a ¼-mile perimeter of controlled surface use prescription and all associated nesting and early brood-rearing habitat will be an avoidance area for surface disturbing activities.

Comment:

Certainly, off-road vehicle use in sage-grouse nesting habitats has negative consequences for the grouse. Call and Maser (1985) made the following recommendations concerning off-road vehicle use and sage-grouse:

"Organized motorcycle or four-wheel drive races across sage-grouse nesting habitat can cause substantial loss of production from direct destruction of nests, from abandonment of nests during egg-laying, from destruction of young chicks, or from all three. If sage-grouse production is a management goal, then it is wise to postpone such races until after the first of September when the birds are old enough to fly out of harm's way" (p. 19). We concur, and urge the BLM not only to avoid the proliferation of new roads and user-created vehicle routes in nesting habitats but also to schedule events away from nesting habitats and avoid scheduling them during the nesting period, if they are allowed at all.

Response:

No organized motorcycle or OHV events are authorized in the JMH CAP planning area without proper evaluation of effects and a permit from BLM. OHVs are limited to existing roads and trails except for the designated OHV area in the Greater Sand Dunes Special Recreation Area; there are no leks in this area.

Comment:

Standards should be issued preventing the spraying of insecticides in sensitive sage-grouse habitats during periods where these habitats are occupied.

Response:

BLM does not authorize the use of insecticides in greater sage-grouse habitats.

Comment:

The proposed nest buffers of ¼ mile for controlled surface disturbance and 2 miles for seasonal stipulations in the Preferred Alternative are grossly inadequate to maintain sage-grouse viability in the Jack Morrow Hills planning area. The lek buffer must be based not only on maintaining the lek but also the nesting habitat that surrounds the lek. In addition, seasonal prohibitions that prohibit only construction activities near leks are pointless: If roads or wells are built near leks during the off-season, the resulting regular vehicle traffic will have major negative impacts when the sage-grouse are present, effectively circumventing any mitigation value of delaying construction activities.

Areas within 3 miles of a sage-grouse lek should be put under year-round stipulations preventing habitat alterations. The BLM should implement this standard in each alternative of the final EIS. Not one of the alternatives analyzed by the BLM considers adequate protective stipulations for sage-grouse leks, nesting habitats, or wintering areas. Under all alternatives, avoidance areas for sage-grouse leks and nesting habitat would be variable, and even the weak timing limitations and seasonal stipulations would be subject to the granting of exceptions (JMH CAP EIS at 2-13). These alternatives require Controlled Surface Use within ¼ mile of leks with only seasonal restrictions within 2 miles of lek sites, by far insufficient to protect this species. At minimum, 3-mile NSO buffers for leks and NSO stipulations for wintering grounds must be established.

Response:

The ¼-mile controlled surface use protection on greater sage-grouse leks is commonly used as a recommended practice by wildlife agencies in Wyoming relative to mineral development. The WGFD Greater Sage-Grouse Conservation Plan, which is based on review of multiple studies on the species, recommends the avoidance of surface disturbance and occupancy within a ¼ mile of known active leks as part of the mineral development recommended management practices. Under the Proposed JMH CAP, all leks will maintain a ¼-mile controlled surface use prescription and all associated nesting and early brood-rearing habitat will be an avoidance area for surface disturbing activities.

Comment:

Pygmy rabbits are obligate residents of sagebrush stands that are tall with dense canopy cover (Green and Flinders 1980, Katzner 1994). Fragmentation of tall sage habitats can reduce the size, stability, and success of pygmy rabbit populations because these animals are reluctant to cross open habitats (Katzner 1994). Tall sage makes up 7.62% of the JMH CAP planning area (Powell, in press); this relative scarcity of this habitat type indicates the need for concrete measures to map and study the impacts of each alternative on the tall sagebrush resource. This has not been done.

Response:

The areas of tall sagebrush have been mapped and are designated as avoidance areas for surface disturbing activities, closed to prescribed burns, and prescribed for high protection from wildfire.

Comment:

The mountain plover is proposed for listing as Threatened under the Endangered Species Act, and its range-wide decline appears to be continuing. BLM is required to manage such species with the same level of protection provided for listed species and designated critical habitat except that formal consultation with FWS is not required (BLM Manual § 6840.06(B)). Pursuant to this requirement, the BLM must determine the occurrence, distribution, population dynamics and habitat condition of mountain plovers, evaluate the significance of lands in the Jack Morrow Hills to the conservation of plovers, develop and implement a management plan that will conserve plovers and their habitat, ensure that all activities affecting the populations and habitats of mountain plovers consistent with recovery needs and objectives, and implement conservation recommendations included in biological opinions (BLM Manual § 6840.06(A)(1)).

In Wyoming, the distribution of plovers has been linked with the widespread occurrence of white-tailed prairie dogs (Oakleaf et al. 1996). White-tailed prairie dogs are very limited in their occurrence within the JMH CAP planning area, and thus prairie dog colonies need to be mapped accurately, protected from disturbance, and surveyed for the presence of mountain plover. The BLM has historically mapped and surveyed for plover nesting areas on a catch-as-catch-can basis, limiting efforts to lands slated for imminent development projects. A broader and more comprehensive survey of nesting plovers by trained personnel is needed throughout the planning area.

Response:

Formal surveys for mountain plover have been initiated in the JMH CAP planning area and are part of an ongoing effort to identify important habitats for special status species. The BLM personnel conducting the formal surveys for mountain plover in the JMH was first trained by the USFWS, which developed the survey protocol.

Comment:

There is no alternative that contemplates protective measures for mountain plover nesting areas that are sufficiently strong. Alternative 2 offers the greatest (but still insufficient) level of protection, with aggregations receiving a 1/4-mile buffer and NSO stipulations (supplemental draft EIS at 4-75). Based on the recommendations of Dr. Stephen Dinsmore (Exhibit 4), we recommend a half-mile NSO buffer around known plover nesting areas as well as white-tailed prairie dog colonies.

There is no doubt that white-tailed prairie dogs have declined markedly in the Jack Morrow Hills area: Almost 100% is good potential prairie dog habitat, and yet active colonies are very scarce. Thus, full recovery of prairie dog populations should be an explicit management goal of the JMH CAP, with concrete measures put into place, in order to maintain and recover raptor populations.

Response:

The BLM based the ¼-mile buffer on recommendations from Dr. Fritz Knopf, the leading scientist for the listing on mountain plover.

Much of the JMH is very rocky and unsuitable for prairie dogs. Because much of the prairie dog habitat has not been mapped, it is not possible at present to determine the percent of the planning area available to prairie dogs.

Comment:

The primary impact to raptor populations is direct disturbance of raptors on the nest, leading to reductions or loss of viability for eggs or nestlings. Disturbance of nesting raptors may cause nest abandonment, damage to the eggs, subject eggs or nestlings to cooling, overheating, or dehydration leading to mortality, prevent young nestlings from receiving sufficient feedings to remain viable, and cause premature fledging (Parrish et al. 1994). Thus, the BLM should establish adequate nest buffers (on the order of 2 miles in diameter) around nest sites, preventing all construction of developments (such as wells and roads) that would lead to future disturbance of nesting raptors through focusing human activities in these areas.

Response:

The BLM is unaware of any studies recommending a 2-mile buffer for all species of raptors. No alternative presented in the supplemental draft EIS offers this level of protection. Seasonal restrictions are completely insufficient; a well or road constructed outside the nesting season is still likely to lead to nest abandonment or reductions in recruitment because of disturbance from vehicle traffic that does occur during the nesting period.

Comment:

Golden eagles, their nests, and young are strictly protected under the Bald Eagle Protection Act (16 U.S.C. 668a-d). This species is very popular with the wildlife viewing public, and conversely has historically suffered from shooting as well as poisoning directed at terrestrial predators. For this reason, we encourage the BLM to stick with the proposed nonlethal predator control requirements in the JMH CAP. Furthermore, the maintenance of viable golden eagle populations should be a guiding principle in the Jack Morrow Hills plan.

Conservation efforts should focus on protecting nest sites and important foraging areas, such as prairie dog colonies. Golden eagles are highly territorial. Even when surface-disturbing activities such as strip mining are located away from golden eagle nest sites, the destruction of important foraging habitats, such as prairie dog colonies, within the territory of nesting pairs can be a major problem for the viability of nesting golden eagles (Tyus and Lockhart 1979).

Response:

Golden eagles will be managed under the raptor management actions of the Proposed JMH CAP as outlined in Table 2-1 and Chapter 2 of the final EIS.

Comment:

We urge you to implement the Citizens Wildlife and Wildlands Alternative, with 2-mile buffers prohibiting surface disturbance. This should apply to ferruginous hawk and peregrine falcon nest sites as well as 1-mile buffers at all other raptor nest sites.

Response:

The BLM is unaware of any scientific studies that support a 2-mile buffer around ferruginous hawk or peregrine falcon nests, or a 1-mile buffer for other species of raptors. BLM would welcome any supporting documentation you could provide regarding these buffer distances.

Comment:

As a BLM Sensitive Species, annual monitoring efforts should be directed at burrowing owls to gain an index of population trend. Haug and Didiuk (1993) reported that 57% of burrowing owls responded to recorded calls in their study and that the "tall and white" stance adopted in response to calls made detection easier. These researchers recommended a series of three surveys at 5-7day intervals during the nesting season to monitor population trends. These monitoring protocols should be established as requirements under the new RMP.

Response:

There are no current plans to conduct annual monitoring efforts for the burrowing owl within the JMH CAP planning area. BLM will conduct surveys for burrowing owls on a site-specific basis wherever suitable habitat is determined to exist. Should burrowing owls be found, all surface disturbing and disruptive activities will avoid nesting sites seasonally up to ½ mile.

Comment:

The ecological importance of prairie dogs, when paired with their low and declining population levels and imminent threats to colony viability, make the compelling case that strong measures must be put in place to protect and restore prairie dogs in the Great Divide planning area. Large prairie dog colonies, plus a half-mile buffer, should be withdrawn from all surface-disturbing activities with minerals leased only under "No Surface Occupancy" provisions. No alternative in the supplemental draft EIS contemplates such protections.

Response:

The BLM is unaware of any scientific studies that support a ½-mile buffer around large prairie dog colonies.

Comment:

Currently, the most recent comprehensive data on prairie dog distribution is from the 1980s; new colony surveys are needed to determine where conservation efforts should be focused and which colony sites require restoration efforts. Forrest et al. (1985) admonished, "All prairie dog colonies should be accurately and consistently mapped" (p. 28). Martin and Schroeder (1979) noted that aerial photography failed to identify many active colonies; these researchers recommended winter photography after snowfall as providing the best visibility of prairie dog colonies. The new JMH CAP should require surveys to

determine the spatial extent as well as periodic sampling protocols to index population trends within the major colonies.

Response:

BLM is currently working to update the boundaries of prairie dog colonies within the RSFO boundaries. It is the jurisdiction of WGFD, not BLM, to conduct periodic sampling to index population trends within the major colonies.

Comment:

While the supplemental draft EIS presents a modest amount of analysis on elk, this document fails to take a hard look at the current status and trends of pronghorn populations, and gives short shrift to meaningful protective measures for pronghorn crucial habitats. The wide-open spaces found in the Jack Morrow Hills area are a haven for important concentrations of pronghorn, which must be granted adequate protection to assure the continued survival and vigor of the native herds, and to assure that the natural patterns of their migrations are not further altered. The BLM should perform spatial analyses of pronghorn habitats by alternative beyond merely the crucial winter range so that effects on summer range can be elucidated.

Response:

Additional information has been added to the final EIS regarding pronghorn populations. It is under the jurisdiction of the WGFD to establish ranges for all big game species. BLM manages these habitats in coordination with the WGFD using the "Wyoming Standards for Healthy Rangelands" (supplemental draft EIS Appendix 10) and Habitat Management Plans developed for specific areas. Special consideration is given to big game crucial winter range. Protective measures for pronghorn crucial winter range within the planning area were developed equally in association with all other big game species' crucial winter range.

Comment:

Surveys should be undertaken to identify the occurrence and distribution of vagrant lichens of the taxa Aspicilia, Dermatocarpon, Masonhalea, and Xanthoparmelia occurring in cold deserts in the western U.S. (Rosentreter 1993) within the lands managed by the Rawlins Field Office, particularly in cold desert shrub steppe habitats and on windblown ridges. Rosentreter (1997) proposed a number of management recommendations for conserving vagrant lichen populations, and we endorse these recommendations. Further study of the distribution and abundance of vagrant lichens on pronghorn winter ranges in the Jack Morrow Hills is needed.

Response:

Thank you for your comment. BLM will forward this request to the Rawlins Field Office.

Comment:

Strong protections must be provided in the JMH CAP for flannelmouth suckers, particularly with regard to the potential for coalbed methane wastewater and/or construction activities to alter the temperature, turbidity, sodicity, alkalinity, and chemical composition of the waters of Pacific Creek and its tributaries.

Response:

BLM is not anticipating any surface discharge of water as a result of coalbed gas activities; therefore, impacts to the flannelmouth sucker from coalbed gas activities would not occur. Management actions designed to protect and enhance riparian areas will indirectly provide protections for the flannelmouth

sucker. These actions include CSU in riparian/wetland areas; ROW avoidance; 500-foot avoidance zone around these areas for surface disturbing activities (except for those actions that are for the benefit of this resource); maintenance of riparian exclosures; and implementation of rangeland health standards and livestock grazing guidelines.

Not directly included in the supplemental draft EIS is an ongoing effort to bring these streams into proper functioning condition through whatever action is necessary as determined in site-specific plans and actions (e.g., AMPs and HMPs, livestock grazing vegetative use levels, grazing timing and intensity).

Comment:

Another reason that seasonal stipulations for crucial wildlife habitats are unacceptable is the ease with which oil and gas companies can get waivers. The BLM outlines the procedures for getting a waiver for seasonal restrictions at page A4-2, hardly a firm commitment to upholding these restrictions and preventing impacts to game animals during the crucial season. While elk calving areas will not be subject to exceptions (a standard which we would encourage BLM to extend to all crucial ranges statewide), exceptions will be made available for measures designed to protect crucial winter ranges (supplemental draft EIS at A4-3). In fact, BLM notes that for pronghorn, "Exceptions will generally be granted except where physical barriers (i.e., highways, fences, rivers, canyons, etc.) limit the animal's ability to move into other suitable habitats" (supplemental draft EIS at A4-3). Thus, it is apparent that crucial antelope winter range stipulations are completely voluntary, as exceptions will "generally be granted" upon request. Exceptions are similarly available for raptor nest sites, including shortening the period of restriction and excepting inactive nests (supplemental draft EIS at A4-4).

Response:

It is correct that exceptions to seasonal restrictions may be granted by the BLM; however, Appendix 4 of the supplemental draft and final EIS details the process that BLM undergoes to determine whether a request will be granted or denied. This process not only involves a thorough evaluation for RMP and NEPA compliance, but also requires an evaluation of specific criteria relative to current conditions of the population and habitat before any decision to grant or deny an exception.

Comment:

Under the supplemental draft EIS, for pronghorn and deer winter ranges and migration routes, fences would be constructed "to minimal standards (3-strand wire fence with bottom wire smooth and top 2 barbed; total fence height of 38 inches)," supplemental draft EIS at A8-1. While this is a good start, we'd like to point out that there must also be minimum height requirements for the bottom strand of 18 inches to comply with WGFD fence standards, and we urge the BLM to adopt even stronger standards, with a minimum bottom strand height of 24 inches (Rosentreter 1997). In addition, all fences throughout the planning area should meet WGFD standards for wildlife passage, not just those which fall within crucial winter ranges or migration corridors. FLPMA requires that BLM actions conform to the standards set by other governing agencies (in this case, WGFD). According to FLPMA, guidance and resource management plans and amendments to management framework plans shall be consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of other federal agencies, state and local governments and Indian tribes…43 CFR § 1610.3-2(a). Thus, the BLM is required to strengthen its fencing standards to comply with WGFD standards at minimum. Existing fences should also be modified to meet or exceed these standards. Wire net fences should be prohibited and removed in areas where they currently exist. In the Jack Morrow Hills, there should be no new fence construction, illegal fences should be removed, and all existing fences should at least conform to antelope passage requirements set forth by WGFD.

Response:

Currently, the WGFD has adopted the fencing standards of the BLM. The WGFD does not have standardized fencing requirements (T. Christiansen, 2003). All fences on BLM-administered lands are required to meet the BLM standards and will be further modified if there is a documented conflict with wildlife.

Comment:

The BLM freely acknowledges that the best available science indicates that elk avoid areas within 1-3 miles of roads and oil and gas facilities (draft EIS at 4-63). This avoidance is typically greater in open habitats lacking cover than in areas where trees are present. The strongest protections considered in the supplemental draft EIS are under Alt. 2, in which big game crucial winter range would receive only seasonal limitations, while birthing areas would receive full NSO protection (supplemental draft EIS at 4-75). And yet on Table 4-3, wildlife crucial ranges would be closed to new leasing (supplemental draft EIS at 4-173).

Response:

Big game crucial winter range is closed to new leasing under Alternative 2; however, activities associated with existing leases and other actions may be allowed except during the seasonal closure.

Comment Number: 100,456

Comment:

A large number of raptors are present in the planning area, including the prairie falcon, golden eagle, ferruginous hawk, burrowing owl, red-tailed hawk, and the Swainsons hawk, and more. There is nesting habitat for 17 raptor species, and at least 83 nests of the various species have been confirmed (Keith 2001). The data we received from BLM Rock Springs Field Office included 93 raptor nest observations, not 83 as mentioned in the draft EIS. Of the 93 total, 34 were ferruginous hawk, 25 were prairie falcon, 15 were golden eagle, and the rest were Great-horned owl, red-tailed hawk, burrowing owl, kestrel, short-eared owl, and Swainsons hawk. Based on our own observations, nest sites for burrowing owl are vastly underreported in the draft EIS, so these totals should be viewed as conservative.

Many species of concern not previously discussed--particularly small mammals, native fish, reptiles, amphibians, and birds besides raptors--are also found in the Red Desert/Jack Morrow Hills area. However, the draft EIS provides almost no information on such species, nor their conservation status or the importance of the habitat or populations in the planning area to the various species. On the adjacent map, we show actual sightings or primary habitat for five animal species known to be of concern. These species are the flannelmouth sucker, pygmy rabbit, Eastern short-horned lizard, Great Basin gopher snake, and Wortmans golden-mantled ground squirrel.

Other species of concern are present in the planning area and must be investigated before any analysis could be considered complete. For example, four groups of species, which require further information are bats, colonial nesting water birds, invertebrates, and sagebrush obligates such as sage thrasher, sage sparrow, Brewers sparrow, sagebrush vole, and sagebrush lizard. "Sagebrush obligate songbirds (sage thrasher, sage sparrow, and Brewers sparrow) are also sensitive to fragmentation. These species prefer larger stands with high shrub cover and decline with increasing disturbance" (Paige and Ritter 1999).

The habitats around Jack Morrow Creek, Pacific Creek, and Alkali Draw appear to be particularly rich in species. Interestingly, while the eastern portion of the Jack Morrow Hills area has generally been subject to less development, many of the areas of higher predicted richness are located in the western part of the

area where there are fewer restrictions on development. Thus, it appears that some of the most biologically diverse places are the least protected. The Action Alternatives considered in the draft EIS would allow further impacts to many biologically rich areas. These findings suggest a gap in biodiversity protection. The BLM must fill this gap by developing measures to protect the areas of unusually high vertebrate species richness.

Response:

BLM has presented and analyzed the best available data and information it has in the final EIS. BLM agrees with the determination of the importance of these species and their habitat. As BLM learns more about specific species and their habitats, this information will be incorporated into the Proposed JMH CAP implementation.

Comment Number: 100,459

Comment:

Right now the current EIS calls for a quarter of a mile buffer within the sage grouse buffering sites. Clait E. Braun in the *Journal of Wildlife Management* , in 1999, published a study where 90 percent of the sage grouse nest within four miles of it. Of that 90 percent, approximately two-thirds nest within the first two months. So as we look at the quarter mile buffer, we realize that it needs to be at least two miles, if not three, and preferably four. That would give the sage grouse the best protection possible.

Response:

As a result of public comment and information received since the publication of the supplemental draft EIS, the Proposed JMH CAP provides an approach to managing greater sage-grouse that focuses on the protection of all suitable habitat (as defined in the final EIS) and does not place buffer distances around leks for nesting and early brood-rearing (see Chapter 2 of the final EIS).

Comment:

The impact analysis for wildlife only mentions possible impacts for those wildlife and really makes no quantifiable statement about what might happen.

Response:

Impacts are quantified where possible or described in qualitative terms in the absence of quantitative data. Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by specialists in the BLM or other agencies.

Comment Number: 100,493

Comment:

Recent research in the Pinedale area and in New Mexico and Oregon has revealed that there is a threshold of roads and noise that birds will tolerate, particularly those that rely on vocalizations to attract males (please see attached documents). Although areas above these thresholds will still hold birds, it's the diversity of species, and not number of individuals, that matters. Industrialized areas lose the avian species that represent diverse habitat qualities and attract instead species like the Horned Lark (an aggressive species that is very tolerant of disturbance). As bird advocates, we certainly do not want to see this type of avian homogenization occur in the Jack Morrow Hills.

Response:

The research data and information attached to the comment letter has been reviewed and considered in the analysis of environmental consequences and in developing measures to manage the multiple uses occurring in the JMH CAP planning area. In addition, we will consider and incorporate new information on impacts to birds as it becomes available.

Comment Number: 200,201

Comment:

When developing management practices and wildlife stipulations, the BLM should use sound science to determine wildlife patterns and whether restrictions are necessary. Too often, areas are closed or severely restricted based on faulty evidence. The BLM should assimilate and analyze all previously collected data for wildlife resources and adjust mitigation as appropriate. It is important that science not scare tactics are used to ensure safety of the environment.

Response:

BLM always uses best available scientific information to make planning decisions.

Comment Number: 200,212

Comment:

Increases in the herd objective must be based upon scientific evidence that forage in the management area can support the increase in the herd objective as well as other range resource users such as livestock grazing, other wildlife, etc. The Wyoming Game and Fish Department must implement a program for controlling the growing elk herd and bringing the elk population numbers back down to the appropriate population objective.

Response:

Thank you for your comments. BLM will relay them to the WGFD, which has a program in place to reduce the Steamboat elk herd population.

Comment Number: 200,218

Comment:

1) With respect to specific language in the document, the NAPF contends that the following corrections and additions be added: Section 4.4.6, Impacts on Wildlife: "Long-term displacement of elk (addition: pronghorn,) or deer, from crucial habitat or birthing areas within the planning area would be considered significant."

Response:

This suggestion has been included in the final EIS.

Comment:

2) With respect to the first recommendation, baseline data on those areas crucial to pronghorn (i.e., fawning areas, summer and winter ranges, movement corridors, movement barriers, water resources, etc.) should be gathered so as to define these areas and provide for their protection and or mitigation prior to the issuance of any additional leases, developments and/or road building. Without identifying such areas

prior to any additional leasing or other development, they cannot be adequately protected nor can they be satisfactorily mitigated after the fact (i.e., "baseline data").

Response:

It is under the jurisdiction of the WGFD, not the BLM, to establish big game habitat ranges and determine movement corridors. Currently, the WGFD does not recognize or designate fawning areas for pronghorn antelope.

Comment:

3) Long term range and game management goals are not clearly delineated for this development area in the draft EIS, nor are mitigations outlined to repair or enhance areas that will be impacted. Before additional leasing is allowed, these plans need to be developed and presented for review by federal wildlife management agencies and corresponding state game and fish departments.

Response:

It is under the jurisdiction of the WGFD, not BLM, to determine game management goals and manage game populations. Long-term range goals are defined by the "Wyoming Standards for Healthy Rangelands" (Appendix 10 of the supplemental draft EIS) and PFCs for streams, wetlands, and riparian areas (Section 3.1.2.2 of the supplemental draft EIS). General mitigation measures for wildlife habitat are outlined in Appendixes 5 and 9 (pg A9-3) of the supplemental draft EIS. Specific mitigation measures are also built into each management alternative (e.g., seasonal restrictions on big game crucial habitat) to ensure continued viability of wildlife species and habitat.

Comment:

4) Man-made artificial barriers (i.e., highways, roads, pipelines, fencing, etc.) have the effect of fracturing habitat and altering natural movement corridors, almost always to the detriment of the species involved, and this is especially evident with pronghorn. As such, the likely construction of extensive networks of roads linking well sites and the fences which often accompany same pose a great threat to pronghorn if they adversely affect or compromise crucial winter or summer range, fawning areas, or movement corridors.

Response:

As part of the Preferred Alternative in the supplemental draft EIS, a transportation plan would be developed for the planning area to reduce effects of roads on wildlife habitat by considering limited access in crucial wildlife habitat, rerouting or rehabilitating existing roads and trails causing resource damage, and concentrating stream and riparian area crossings in key locations (supplemental draft EIS page 2-130-131). Fences that accompany well sites are designed to exclude wildlife for their protection. Any other fences that interfere with wildlife movement will be modified or removed if necessary.

Comment:

5) As such, the NAPF would recommend the use of "permissive" fencing if any be required (i.e., fences which allow animal passage) rather than "nonpermissive" fencing (i.e., net wire or too high) in all fencing that may be utilized. And further, would recommend that existing fences in the draft EIS area be modified to BLM standards for fencing, wherein a smooth wire is used on the bottom strand not to be lower than 9 inches from the ground, and no net wire fence be used at any location in the area.

Response:

It is a standard operating procedure that all fences contained on public land managed by the BLM meet BLM standards for fencing. BLM is not aware of any fences on BLM-administered lands in the planning area that do not already meet our standards for fences in wildlife habitat.

Comment:

8) The establishment of a monitoring team, composed of various federal oversight agencies, state fish and game department, state DEQ, conservation organizations, and other legitimate stakeholders, should be undertaken immediately to track compliance with BLM standards, habitat mitigation, environmental effects, game impacts, etc.

Response:

See Appendix 17 of the final EIS for an explanation of the creation of the JMH CAP working Group that will assist BLM with the implementation and management of the Proposed JMH CAP.

Comment:

10) Surface water produced by CBM development that cannot be reinjected should be stored for wildlife use, assuming that the quality of such water is potable and not prohibitively saline and reclaimed lands seeded with high forb/shrub mixture.

Response:

Based on wells that have been drilled inside and/or adjacent to the planning area, produced water from coalbed gas development would be highly saline and toxic. The BLM is not anticipating any surface discharge of water as a result of coalbed gas activities for these reasons.

Comment:

11) Grazing permits should be maintained at the current level and not allowed to return to the maximum allowable AUMs until the impact of these extractive industries can be determined as to their adverse effect on wildlife populations.

Response:

Under BLM AMPs prepared for each allotment within the planning area, grazing permits are managed to improve or maintain rangeland health.

Comment:

With respect to management strategies to be employed to mitigate the impacts of a development of this scale, we would suggest that the following publications be used as reference materials: a) Krausman, R., editor. 1995. Rangeland wildlife. Society for Range Management, Denver, Co.440pp. ISBN1 -884930-05-0, b) Lee, R.M., J.D. Yoakum, B.W. O'Gara, T.M. Pojar and R.A. Ockenfels, editors. 1998. Pronghorn management guides. Pronghorn Antelope Workshop, Prescott, Az. 110pp, c) Demaris, S. and P.R. Krausman, editors. 2000. Ecology and management of large mammals in North America. Prentice Hall. Upper Saddle River, N.J., USA. 778pp. ISBN 0-13-717422-5.

Response:

Thank you for this information. BLM will consider this information as it moves forward in implementing the JMH CAP.

Comment:

2) Next to last sentence in fourth paragraph on page 4-64: "Seclusion areas for wildlife would become smaller and more dispersed in some areas. Increased oil and gas activity, especially in areas with reduced well spacing (40 and 80 acre spacing) would preclude use of some of these areas by wildlife species, especially deer (addition: pronghorn), and elk."

Response:

The addition was not included in the final EIS because of evidence that pronghorn tend to be more adaptive to oil and gas activity than deer and elk.

Comment:

3) Last paragraph fourth sentence on page 4-85: "Should development be concentrated within the high development potential area, which includes the core area, adverse effects to the elk (addition: and pronghorn) herds would be greater than if development were dispersed because the majority of the high development potential area overlaps big game crucial habitat and birthing areas."

Response:

The addition was excluded from the final EIS because pronghorn crucial habitat has minimal overlap, compared with that of deer and elk, within the high development potential area (Maps 51 and 69 of the supplemental draft EIS). There is very limited habitat for pronghorn within the Core Area as a result of sand dunes, timber and topographic relief.

A-19.11 HERITAGE RESOURCES MANAGEMENT

Comment Number: 52

Comment:

Section 1.5 Planning Issues and Criteria, 1.5.1 Planning Issues, Issue 3: Effects of Land and Resource Uses on Recreation and Cultural Resource Management. Principal considerations include providing for suitable and sufficient recreation uses and facilitates (both dispersed and commercial, and particularly in the Greater Sand Dune Recreation Area), visual resource management direction, road designations (transportation planning), and management of cultural and historical resources (the need for protection of Native American-respected places is of particular concern).

Does the term "Native American-respected places" equal "sacred site"? According to Section 2 of Executive Order No. 13007: Indian Sacred Sites (of May 24, 1996, signed by President William Clinton), "Sacred site" means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

Throughout this supplemental draft EIS, much care has been made to designate Native American sites as "respected places." I am not an enrolled member of the Shoshone or Arapaho Tribes, thus I cannot speak for them. But as a concerned citizen and enrolled member of the Navajo Nation (whose protection of sacred sites often times comes up against the same kind of bureaucratic lip service), I posit that these sites are indeed sacred and deserve the protection afforded them by years of federal Indian law, Presidential Executive orders and internal memoranda developed by federal agencies, the Bureau of Land Management included.

Response:

The terms "respected places" and "sacred sites" have been clarified in Chapter 3 of the final EIS and further defined in the Glossary.

Comment:

Section 2.2.2Heritage Resources Management (Management Actions Common to All Alternatives). The planning area would be managed to protect important heritage resources (cultural, historic, archaeological, and unique geological features) while allowing for educational research and appropriate interpretive uses.

Native American Sites. Consultation would occur with Native American tribal governments in accordance with the American Indian Religious Freedom Act (AIRFA) for the protection of recognized traditional uses and cultural values in the planning area.

Surface disturbance and disruptive activities would be prohibited within 100 feet of respected places. Native American respected places (located generally in the Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Joe Hay Rim areas) and the Indian Gap Trail would be protected by provisions of the NHPA and AIRFA.

In managing respected places, rights-of-way would avoid the actual sites. For related viewsheds, mitigation would be applied to reduce the sights and sounds from an activity. The intent is to provide mitigation in these viewsheds, not to exclude an action or activity.

How do you mitigate the damage done to a viewshed from the development of roads, wells, and pipelines?

Response:

BLM mitigates possible effects to viewsheds by appropriate placement of roads, wells, and pipelines and reclamation. Sometimes varying the types of vegetation used for reclamation, use of berms, and other alterations in road design and reclamation can help mitigate impacts to those kinds of resources that have landscape aspects to them.

Comment:

In Section 2. Procedures of E.O. 13007: Indian Sacred Sites, "Each executive branch with statutory or administrative responsibility for the management of federal lands shall, as appropriate, promptly implement procedures for the purposes of carrying out the provisions of Section 1 of this order, including, where practicable and appropriate, procedures to ensure reasonable notice is provided of proposed actions or land management policies that may restrict future access to or ceremonial use of, OR ADVERSELY AFFECT THE PHYSICAL INTEGRITY OF, SACRED SITES" (emphasis is mine). How would prohibiting surface disturbance and disruptive activities within 100 FEET of a sacred site not adversely affect the physical integrity of that site?

There is a large disparity between protections planned for other resources (e.g., wilderness study areas, protected species areas) compared to the Native American sites. Overall, Indian sites receive far less recognition, study and protection from harm. There is an importance and sacredness recognized by many tribes of varying areas within the Red Desert. This supplemental draft EIS does not address these issues; instead proposes a one-size-fits-all (100-foot buffer) to "respected sites."

Response:

The "100-foot avoidance" measure is a minimum standard that comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies only to sites eligible for the National Register of Historic Places (NRHP) under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer, and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (regardless of whether the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with Tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted. If no other avoidance were proposed, the 100-foot minimum avoidance area would be applied.

Comment Number: 100,036

Comment:

Protection must be afforded for the many culturally significant Native American sites, geological and pioneer landmarks found in the Red Desert.

Response:

The BLM will implement provisions of the NHPA, American Indian Religious Freedom Act, Archeological Resources Protection Act, National Trails System Act, and other laws, regulations, and policies to protect and manage various archaeological and historical sites, sites of concern to Native Americans, and geological landmarks.

Development of interpretive materials and site-specific management efforts at sites of concern to the tribes on the Wind River Reservation will help improve understanding and appreciation of Native American (especially Eastern Shoshone and Northern Arapaho) history and culture. Furthermore, efforts will be made to better formalize consultation efforts with Native Americans and the governmental entities that represent them.

Comment Numbers: 100,084; 100,134; 100,140

Comment:

Oil and gas development will endanger Steamboat Mountain, a Shoshone holy site, and an ancient Native American buffalo jump hunt site.

Response:

Several comments have been received concerning a buffalo jump site in the Steamboat Mountain area. However, extensive investigation by the BLM indicates that no buffalo jump site has been documented, nor studied in the Steamboat Mountain area. It seems that references to a buffalo jump in this area may be the result of public knowledge about the Finley buffalo processing site in the paleosol deposition area, some 10 to 15 miles west of Steamboat Mountain. Please see discussion of the paleosol deposition area in Chapter 3 of the final EIS for more information.

Consultation with Native Americans indicates the presence of several places they prefer to call "respected places," rather than holy sites within the JMH CAP planning area. Both site-specific and general management prescriptions have been developed concerning management of these places. The most crucial aspect of management of these places of concern involves continuing and enhancing established consultation processes with Native Americans and the governmental entities that represent them.

Comment Number: 100,088

Comment:

While I am a strong advocate for the protection and preservation of the relatively few wilderness areas that remain, simply as a place where the public can experience nature and rejuvenate our beings, I found the most shocking aspect of the Jack Morrow Hills BLM plan to be the disrespectful way in which the Native American archeological sites are proposed to be treated.

I do not see "environmental justice" in dismissing the Wind River Indian Reservation people's interests because of the supposed distance between the reservation and the Jack Morrow Hills. As has long been the history of the White population in their treatment of the Native Americans, this EIS seems to show that we feel that our (the White) cultural and historical interests are more important and more worthy of protection. It is my opinion, as someone who has worked in the reservation schools for the past three years, that it is of extreme importance to the American Indians of Wyoming that evidence of their particular history and spiritual practices be respected and maintained. Industrial activity within 100 feet of these sites shows little regard for their values, let alone opportunity for their appreciation.

Response:

BLM and Wyoming State Historic Preservation Office staff acknowledge that the supplemental draft EIS alternatives, with regard to Native American sites, were confusing and the intended management actions were not well articulated. BLM believes some of the sites of concern to Native peoples have the potential to help tribal peoples revitalize important aspects of their cultures. BLM recognizes that the intent, if not the precise wording of the AIRFA, speaks to these issues. BLM would like to work more closely with tribal peoples than has been the case in the past to assist tribes in using places on BLM lands in their cultural revitalization efforts. BLM hopes that development of interpretive materials and site-specific management efforts at sites of concern to the tribes on the Wind River Reservation will help improve understanding and appreciation of Native American (especially Eastern Shoshone and Northern Arapaho) history and culture.

The term "environmental justice" has specific legal definitions relating to analysis of disproportionately adverse human health or environmental effects on minority and/or low income populations. As outlined in Chapter 3 of the supplemental draft EIS, the planning area does not support an environmental justice population. Issues regarding sacred sites are regulated under AIRFA and other laws rather than under the environmental justice framework.

Comment Numbers: 100,183; 100,240; 100,344; 100,383; 100,384; 100,390; 100,432; 200,212; 200,223

Comment:

The preferred alternative would unduly restrict activity within 3 miles of the centerline of National Historic Trails. The current stipulation in the GRRMP for the protection of trails and associated view sheds calls for an avoidance area of 1/4 mile on either side of the trail or visual horizon, whichever is less. BLM must abide by the current stipulation until the Trail Management Plan is completed, is subject to public review and is amended to the GRRMP.

Response:

The interpretation of the Green River RMP is incorrect. In 1997, the Record of Decision (ROD) for the Green River RMP established the South Pass Historic Landscape Area of Critical Environmental Concern (SPHL ACEC) to manage the area around which the Congress established the South Pass National Historic Landmark in 1959. The ROD separated the SPHL from other areas of the NHT system and provided special management prescriptions in the SPHL ACEC. Although most other portions of the NHTs on BLM lands in Wyoming are managed with the ¼-mile buffer, with regard to the SPHL ACEC, the buffer is 3 miles.

Comment Number: 100,202

Comment:

It is my understanding that cultural resources related to European American history, such as the various overland trails which cross the area, are to receive a development buffer of 1/4 mile. Native American relics such as ruins or petroglyphs are only to get a 100-foot development buffer. If this is the case, it would seem as though there are a large number of Native American relics concentrated in the area, which would further my belief that it should be reserved for non-development use, such as recreation and wildlife. However, the plan turns out for the area, this disparity should be re-examined, and/or clearly explained so as not to seem culturally unfair.

Response:

The "100-foot avoidance" measure is a minimum standard that comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7), where it applies only to sites eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer, and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where Native American respected places are concerned (whether the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically related to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted. Even though in many cases the 100-foot avoidance distance is appropriate, this distance is by no means the absolute avoidance prescription; rather, avoidance distances are always specifically designed to address the activity and the resources that would be affected.

Comment Number: 100,342

Comment:

Historic Livestock Management Sites: The BLM should not try to restrict any legitimate livestock management activity near an "historic livestock site" if that activity is needed by permittees to help maintain a viable livestock operation. The WSGB certainly supports the protection of important elements of our history. But it would indeed be ironic if BLM were to place unnecessary restrictions existing viable livestock operations in order to protect a relic site that evolved into a relic site because it could no longer qualify as a component of the current livestock industry. History might then repeat itself.

Ranching-Related Historic Sites: The WSGB has been told by local ranchers that this narrative is inaccurate with respect to name and ownership location of some of the sites listed in the draft. Please make every effort to fix these concerns as they are identified by the ranchers.

Response:

Several comments in the scoping process were identified the local "custom and culture" as issues that should be addressed. The historical overview in the JMH CAP merely sets a framework necessary for evaluating places on federal land for their importance to the history (e.g., the custom and culture) of the area. The purpose of identifying historic livestock sites in the supplemental draft EIS was to recognize custom and culture as it relates to ranching in the planning area. The management prescriptions for these resources apply only to the BLM-administered lands; however, Chapter 3 (affected environment) identifies those sites that are on private lands in the planning area. At the request of landowners, in some cases the sites have been deleted from our discussion.

Comment Number: 100,343

Comment:

3.2.5.4 Ranching-Related Historic Sites: This section mentions ranching-related historic sites that are included in the JMH CAP planning area. It is mentioned that the Halter and Flick Ranch at Pacific Springs is on private land. For the sake of consistency, the other private sites, such as Chilton and Houghton Ranch sites, the Washington Homestead, and Charlie Jameson's horse trap and cabin should also be listed as privately owned. An effort should also be made to use historically correct names for the sites. At least they should be names that are used by local citizens.

Response:

Discussion of these sites with several local informants, including JoAnn Zakotnik, seems to indicate that the sites are correctly named with the exception of the Jameson horse trapping facility, which was actually built by early settler Bill Lewis.

In addition, please see response to comment number 100,342.

Comment Number: 100,376

Comment:

Cultural and paleontological resources should be preserved in place so that their full scientific and cultural values can be evaluated and maintained. All permits, leases, contracts, rights-of-way or other agreements allowing private uses should require consultation and inventories prior to any surface disturbance to determine whether such resources are or may be present.

Requiring private users to conduct inventories prior to conducting surface-disturbing activities, however, is not adequate protection for cultural and paleontological resources. FLPMA requires the agency itself to "prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values." 43 U.S.C. §1711(a). Surveys for cultural resources are mandated by ARPA. See 16 U.S.C. 470ii (requiring the Secretary of the Interior to develop plans for surveying lands to determine the nature and extent of archaeological resources and to prepare a schedule for surveying lands that are likely to contain the most valuable archaeological resources); Executive Order 11593, Protection and Enhancement of the Cultural Environment (requiring federal agencies to nominate to the Secretary of the Interior all sites that appear to qualify for listing on the National Register of Historic Places). NHPA mandates that the BLM establish a preservation program to identify, evaluate, and protect historic properties and to nominate

qualifying properties to the National Register of Historic Places. See 16 U.S.C. § 470h-2. BLM should conduct its own inventories of the planning area in order to identify sites of cultural and paleontological resources. Sites of known cultural or paleontological resources within the Jack Morrow Hills should be designated and protected as ACECs.

BLM's own guidance on cultural resources states that the need for any additional information should be evaluated and procedures for obtaining that information must be established at the outset of the planning process. See BLM Manual MS-8100.08.A.1.b.(2). In other words, not only must BLM examine the effects of other uses on cultural resources during preparation of the final JMH CAP, it must evaluate whether or not the agency itself possesses sufficient information to assess the potential for such conflicts. If the agency lacks adequate information to make informed decisions, it must collect the necessary data according to a schedule established at the outset of the planning process. Yet, the supplemental draft EIS admits that only a "limited formal cultural resources inventory has been conducted in the planning area" (supplemental draft EIS at 3-23). Scarcely two percent of potential localities in the region have been identified (supplemental draft EIS at 3-27). "No attempt has been made to identify specific sites that may be of concern to traditional Native American peoples" (supplemental draft EIS at 3-26). Without such information, BLM is incapable of making reasoned decisions about the impact of the activities authorized under the JMH CAP on cultural resources within the planning area.

Response:

It is BLM policy to avoid adverse effects to historic properties whenever possible. BLM requires inventory of all areas of potential effect for heritage resources before authorization and includes a standard stipulation on all authorizations requiring oil and gas developers, rights-of-way holders, and other holders of authorizations to report any unexpected discovery of heritage resources. This stipulation is the BLM's process for implementing 36 CFR 800.13. This "discovery" stipulation on occasion results in situations where corrective actions must be taken, and developers are usually responsible for the costs of actions required to ameliorate the impacts that could or have occurred to the heritage resource. Furthermore, BLM has representatives inspecting oil and gas, and ROW operations on a continual basis so that other impacts to heritage resources, or any violation of BLM stipulations can be recognized and corrective measures can be taken.

BLM agrees that it is always better to have more inventory whether the information is gathered under the auspices of Section 110 (of the NHPA) or for any other purpose; however, NEPA requires only that the best available science and information be used. The reference to 2 percent of the area having been inventoried refers to the portion of the planning area where activity-specific Class 3 field inventories for cultural information have been conducted. Other less specific reconnaissance surveys and research have also been conducted. This resource information is on file in the RSFO and SHPO. As new information is obtained on heritage resources within the planning area, BLM will incorporate this into its monitoring strategy and consultation efforts. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The JMHCAP should also provide for protection of components of the National Landscape Conservation System (NLCS). These areas should be managed to ensure the values that led to their special management status are given first priority and incompatible uses are prohibited.

The planning area contains the following lands that are part of the NLCS: WSAs and segments of several Historic Trails as well as the Continental Divide National Scenic Trail. These lands deserve special protections. In particular, lands within the viewshed of these trails should be protected from oil and gas

development and other industrial activities that would mar the purposes for which these trails were set aside.

The JMHCAP should identify and recommend potential additions to the NLCS. Likewise, the final land use plan should ensure BLM's Grasslands Initiatives, as applicable, are fully implemented.

Response:

The NHTs are protected under numerous BLM documents and processes, including the 1986 Wyoming BLM Statewide Oregon and Mormon Pioneer NHT Plan; the Green River RMP, including management related to the South Pass National Historic Landscape ACEC; and case specific consultations with the Wyoming State Historic Preservation Office relative to proposed federal undertakings. At present, no specific management prescriptions are relative to properties considered within the NLCS nomenclature within the BLM.

Comment Number: 100,378

Comment:

Another point that concerns me is the lack of agency resources and protective measures recommended in the preferred alternative for the Native American respected places and holy sites. I recommend that the Indian Gap Trail have a 5-mile from center on each side viewshed protection zone, as those similarly proposed for non-Indian trails. I also believe that the BLM fails to adequately protect the numerous Native American sites throughout the region. A 100-foot buffer zone from surface disturbance is not enough of a guarantee, nor does it provide an adequate buffer if an accident were to occur (large truck going off the road?) I suggest a 1/4-mile buffer around all sites, known and those to be found in the future, from all surface-disturbing activities. In addition, the BLM should then work with the Tribes to develop a further list of protective measures that will be tiered to the relative importance and fragility of each type of site.

Also on this topic, I believe the BLM failed in its outreach duties to involve and engage the Shoshone and Arapaho tribes in consultation for this draft EIS. Everyone in this area knows that culturally, just a letter sent to the Business Councils is not the way that you get their attention on matters that should concern them. Many federal agencies such as the U.S. Fish and Wildlife Service and the NRCS know this and operate in a different way and very successfully, with the Tribes.

I believe also that the BLM should invest resources in greater outreach to and support to the tribes to help them develop their internal capacity to evaluate cultural sites and provide consultation with the BLM. The Tribes do not have an excess of funds to spend on cultural site protection or consultation, but the BLM could help this situation by assisting in the procurement of federal funds for this need. I also find it a double standard that Native American Tribes appear to hold all the responsibility for ensuring adequate protection of their past cultural sites on public lands, whereas the ancestors of the outlaws, Pony Express Riders, and Oregon Trail pioneers are not required to provide this same level of involvement and oversight. Native American holy and cultural sites should be protected with as much vigor and resources from within the federal agencies as for other cultural sites. But instead, they seem to fall into a second-class status...as is evidenced within this draft EIS. Non-Indian cultural sites overall receive far better protective treatment in the BLM's draft EIS than Native American sites.

Response:

BLM will continue to research, map, and consult with tribal representatives concerning the Indian Gap Trail. Eventually a Cultural Resource Management Plan will be completed for the Indian Gap Trail.

Ongoing consultation with tribal representatives is the most crucial aspect of management of the Indian Gap Trail.

In any case, where a proposed activity would be within proximity of a historic property known to be of concern to Native Americans, the BLM would initiate consultation with tribal representatives concerning the significance of the resource and the appropriate disposition of the proposed activity, including mitigation actions.

The "100-foot avoidance" measure is a minimum standard and comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies to *only* sites eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes discussions with the Wyoming State Historic Preservation Officer and sometimes other interested parties. Appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether or not the place would also be a traditional cultural property (TCP) or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

The Native American consultation effort has been documented in Chapter 5 of the supplemental draft EIS and final EIS. The consultation process has also been explained in Appendix 7 of the final EIS. As the documentation on page 5-6 of the supplemental draft EIS indicates, consultation has been ongoing in the Rock Springs BLM office since at least 1986, and characterizing the process as beginning and ending with the JMH CAP planning effort is not a fair representation. Native American consultation is most effective when it is an ongoing process in which both the federal agency and the tribes learn throughout the process, and knowledge is continually improved and brought to bear on future planning efforts.

The BLM recognizes that changes have been made in the Eastern Shoshone and Northern Arapaho business councils in the past year. BLM's discussion with Shoshone Chairman Vernon Hill indicates that the present council may not have been fully aware of the discussions that had occurred over the years with previous administrations. Consequently, a new series of letters and follow up telephone calls has been made to these governmental contacts. BLM has since met with each business council and has provided information on these additional consultation efforts in the updated Chapter 5 of the final EIS. Following a review of our consultation process relative to this planning effort, in addition to consultation efforts conducted as a result of comments received on the supplemental draft EIS, the BLM believes its consultation processes were thoroughly adequate.

Comment Numbers: 100,381; 100,459

Comment:

Why does the Agency give American Indian holy sites less protection (a 100-foot buffer zone from development) than non-Indian respected places such as the Crookston Ranch and the Oregon Trail?

Response:

The "100-foot avoidance" measure is a minimum standard and comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies only to sites

eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer and other interested parties, and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether or not the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

Comment Number: 100,385

Comment:

BLM has not adequately consulted with Native American tribes as required by NationalHistoric Preservation Act (NHPA), Federal Land Policy and Management Act (FLPMA), andNational Environmental Protection Act (NEPA). NHPA, FLPMA, and NEPA explicitly require federal agencies to consult with Native American tribes with respect to land management decisions that may affect tribal interests.

Given the federal authority surrounding consultation, BLM has failed to adequately consult Native American tribes in several respects. First, BLM indicates that it contacted the Northern Arapaho, Eastern Shoshone, Shoshone-Bannock, and Ute tribes via a form letter (supplemental draft EIS at 5-6). The letter requested information on heritage resources within the planning area. Id. Simply sending out form letters, however, does not satisfy BLM's responsibilities. See Pueblo of Sandia, 50 F.3d 856. BLM also invited these tribes on a tour of Jack Morrow Hills, but only Eastern Shoshone representatives attended (supplemental draft EIS at 5-6). The Eastern Shoshone identified areas it considered "respected places." Id. The other tribes did not respond to BLM's letter or tour offer. Nevertheless, BLM failed to make a "good faith" effort to determine whether other traditional cultural properties (TCPs) exist within the planning area. Therefore, it should have attempted to follow up with the tribes that did not respond to the letter or the tour. Often times, Native American tribes do not have the resources or the ability to handle BLM's requests.

Response:

BLM disagrees that it has not made a good faith effort to determine cultural properties. BLM did contact various tribes and provided a summary of this contact in Chapter 5 of the supplemental draft EIS. The discussion at supplemental draft EIS 5-6 documents an ongoing consultation process with the Northern Arapaho and Eastern Shoshone tribes for more than 15 years. The overall process BLM follows is more fully explained in Appendix 7 of the final EIS. The BLM does not view the consultation process as beginning and ending with each individual planning effort, but rather as a continually evolving process. This ongoing process often has involved tribal representatives other than the business councils.

The BLM recognizes that there have been changes in the Eastern Shoshone and Northern Arapaho business councils in the past year. BLM's discussion with Shoshone Chairman Vernon Hill indicates that the present council may not have been fully aware of the discussions that had occurred over the years with previous administrations. Consequently, a new series of letters and follow up telephone calls has been made to these governmental contacts. BLM has since met with the business councils and has provided information regarding these additional consultation efforts in the updated Chapter 5 of the final EIS.

Following a review of our consultation process relative to this planning effort, in addition to consultation efforts conducted as a result of comments received on the supplemental draft EIS, the BLM believes its consultation processes were appropriate.

Comment:

Indicative of BLM's failure to adequately consult with the Northern Arapaho, Shoshone-Bannock, and Ute tribes, is the Northern Arapaho's recent objection to certain activities within Jack Morrow Hills. We are aware that the Northern Arapahoe and the Eastern Shoshone are deeply concerned with the lack of protection for Native American traditional and religious cultural and spiritual properties. In fact, it appears that some of their concerns mirror our comments. In particular, we understand the Northern Arapahoe believe that BLM's protection of visual resources, especially identified places like Indian Gap Trail, is not adequate enough to preserve the integrity of these sites. We too recognize that BLM's proscribed buffer for cultural properties like Indian Gap Trail, as well as Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Joe Hay Rim, does not effectively prevent the destruction and desecration of these significant traditional cultural properties.

Our second concern is that BLM has not adequately considered Native American traditional cultural properties (TCPs). Inadequate Native American consultation jeopardizes identified and unidentified TCPs or "respected places" as they are characterized in the supplemental draft EIS, and other cultural and historic properties. Consultation leads to an important dialogue between sovereign nations, Native American tribes, and BLM. Only those tribes with a religious, spiritual, or lineal connection with TCPs can accurately identify which areas should be protected. Therefore, BLM must make a "reasonable and good faith effort" to discover and consider Native American information in making land use decisions. See Pueblo of Sandia v. U.S., 50 F.3d 856 (10th Cir. 1995).

Response:

BLM will continue to research, map, and consult with tribal representatives on Indian Gap Trail through preparation of a Cultural Resource Management Plan. Ongoing consultation with tribal representatives is the most crucial aspect of management of the Indian Gap Trail. In any case where a proposed activity would be within proximity (as determined by the nature of the proposed activity and the description of the historic resource involved), the BLM would initiate consultation with tribal representatives concerning both the significance of the resource and the appropriate disposition of the proposed activity, including mitigation actions.

The "100-foot avoidance" measure is a minimum standard and comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies only to sites eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer, and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether or not the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

BLM believes there is a misunderstanding that the definitions of TCPs, sacred sites, and respected places are in all cases synonymous. They are not. Few, if any, of the kinds of things identified by Shoshone representatives, and called respected places by them, actually qualify as sacred sites (according to AIRFA and E.O. 13007) or TCPs (according to the ACHP and the Keeper of the NRHP guidelines for identifying TCPs within the NRHP process). This is because no continuity of use of these sites over time can be demonstrated, and more importantly, no present day use of them has been documented. A full explanation of the differences and definitions of these sites has been added to Chapter 3 of the final EIS.

See also response to Comment 100,378.

Comment:

BLM must consider TCPs early in the planning process so that adequate prescriptions can help prevent destruction of these sacred places. For example, BLM discusses The Indian Gap Trail as "a significant historic resource [that] . . . may or may not also be a Traditional Cultural Property," supplemental draft EIS at 3-25 (emphasis added). BLM further admits that it has not determined the trail's exact route, nor has it mapped the trail. Yet, in BLM's preferred alternative, BLM opens the area for mineral development protecting the Indian Gap Trail only by stipulating a 100-foot buffer, as well as NHPA Section 110 obligations. The fact that Indian Gap Trail "may or may not be" a TCP indicates BLM did not take the necessary step to determine its value to the Native American tribes. Id. BLM should have consulted with the tribes about Indian Gap Trail in order to establish necessary protections to maintain its integrity and value to Native Americans.

Response:

BLM does not agree. The fact that BLM has not made a decision as to whether the Indian Gap Trail constitutes a TCP simply indicates the caution with which BLM is proceeding in this matter. To date, the BLM has not documented, nor have tribes provided, any evidence of ongoing use of the trail as is necessary for an historic property to meet the threshold for NRHP eligibility as a TCP. BLM does acknowledge that the Indian Gap Trail is eligible for the NRHP under Criteria A, and possibly under Criteria D. BLM will continue to research, map, and consult with tribal representatives on Indian Gap Trail through preparation of a Cultural Resource Management Plan.

In the meantime, ongoing consultation with tribal representatives is the most crucial aspect of management of the Indian Gap Trail. In any case, where a proposed activity would be within proximity (as determined by the nature of the proposed activity and the description of the historic resource involved), the BLM would initiate consultation with tribal representatives concerning the significance of the resource and the appropriate disposition of the proposed activity, including mitigation actions.

Comment:

Because TCPs and sacred sites have irreplaceable value to living, historic cultures, BLM should make every effort to understand and define these places within the resource management planning process. Understanding these values requires consultation with Native American tribes.

Our third concern is that BLM did not make a "good faith effort" to contact other Native American tribes with respect to the supplemental draft EIS. BLM contacted only four tribes in or close to Wyoming, and the Medicine Wheel Alliance 1, supplemental draft EIS at 5-6. Historically, many Native American tribes roamed or lived in the Jack Morrow Hills area. However, either by displacement or migration, some of these tribes are many miles, and states, away. Other tribes may have significantly important information regarding TCPs or other culturally significant resources within Jack Morrow Hills. We spoke with several tribes who were not contacted, but who have historical ties to the area. For instance, the Comanche tribe indicated that BLM did not contact them, even though there are known Comanche rock art sites around

the Jack Morrow Hills area. In addition, BLM did not contact the Crow or the Blackfeet, who were known to have occupied and traveled in this area.

Response:

BLM disagrees that it has not made a good faith effort to document cultural properties. BLM contacted various tribes and summarized this contact in Chapter 5 of the supplemental draft EIS. The discussion at supplemental draft EIS 5-6 documents an ongoing consultation process with the Northern Arapaho and Eastern Shoshone tribes for more than 15 years. The overall process BLM follows is more fully explained in Appendix 7 of the final EIS. Following a review of our consultation process relative to this planning effort, in addition to consultation efforts conducted as a result of comments received on the supplemental draft EIS, the BLM believes its consultation processes were thoroughly adequate.

In Chapter 3 of the final EIS, BLM has expanded its discussion on the research conducted for determining which tribes BLM will consult with relative to Green River Basin planning efforts.

Comment:

Jack Morrow Hills consists of approximately 622,000 acres. Of the large planning area, less than 5 percent has been inventoried for historic or cultural resources, yet BLM has designated an overwhelming majority of the area as open for mineral development. Designating an area for specific uses, especially those likely to adversely impact cultural resources, without understanding what cultural and historic resources are at risk is contrary to BLM's stewardship role under Section 110. The preferred alternative explicitly defers BLM's responsibility to inventory heritage resources until it evaluates resources in the area of potential effect as part of the approval process for any surface disturbing activity, which for oil and gas activity usually means after an area has been leased but before an application for a permit to drill (APD) has been issued, supplemental draft EIS at 4-88. Without an adequate and complete inventory of historic and cultural resources, it is not possible for BLM to adequately comply with the NHPA or NEPA. In particular, designating an area as open for a particular use, i.e. mineral development, could effectively foreclose the opportunity to withdraw certain areas that are extremely fragile or that cannot be mitigated by data recovery.

Response:

BLM concurs that it is always better to have more inventory, whether the information is gathered under the auspices of Section 110 (of the NHPA) or for any other purpose; however, NEPA requires only that the best available science and information be used.

As part of the monitoring strategy for the Proposed JMH CAP, BLM will apply for funding to do additional inventory for cultural resources and reconnaissance of areas where specific resources types of concern to Native American are anticipated.

It is BLM policy to avoid adverse effects to historic properties whenever possible. BLM requires inventory of all sites for heritage resources before authorization and includes a standard stipulation on all authorizations requiring oil and gas developers, ROW holders, and other holders of authorizations to report any unexpected discovery of heritage resources. This stipulation is the BLM's process for implementing 36 CFR 800.13. This "discovery" stipulation occasionally does result in situations in which corrective actions must be taken pursuant to the stipulation and developers are usually responsible for the costs of actions required to ameliorate the impacts that could or have occurred to the heritage resource. Furthermore, BLM has representatives inspecting oil and gas, and ROW operations on a continual basis so that other impacts to heritage resources, or any violation of BLM stipulations can be recognized and corrective measures can be taken.

Comment:

We have serious concerns with respect to BLM's management approach. The federal authority requiring BLM to conduct a review of cumulative impacts when examining multiple uses arising out of planning activities – FLPMA, NEPA, NHPA, BLM policies and procedures, Executive Orders 13007, 13287 – is overwhelming. The supplemental draft EIS opens certain significant cultural areas up for new mineral leases even though BLM has determined that these areas have a "low potential" for minerals. See supplemental draft EIS at Maps 54 and 69. Instead of making an attempt to outline potential environmental consequences associated with opening 469,251 acres available for mineral development, BLM simply states that surface disturbing activities could directly and indirectly impact heritage resources, supplemental draft EIS at 4-99.

Response:

As outlined in Appendix 17 and analyzed in Chapter 4 of the supplemental draft EIS and final EIS, a monitoring strategy will be implemented as part of the Proposed JMH CAP, which will help determine mitigation needs related to mineral development and other activities. Although heritage resources are not currently listed as an indicator, the requirement for site-specific inventory before approval of any undertaking on federal land will reduce adverse effects to heritage resources. Nonetheless, the BLM acknowledges that some impact to heritage resources could occur, even though rigorous processes are in place to prevent these impacts.

Comment:

BLM's discussion of cumulative impacts associated with surface disturbance due to mineral development does nothing more than quantify how many cultural resources may be disturbed. See supplemental draft EIS at 4-102. BLM estimates that new oil and gas development will disturb approximately 1,600 acres. Id.; see also Appendix 13, Table A13-7. Using an assumed density, 3.2 acres per 640 acres, BLM approximates that new oil and gas development will potentially disturb 13 sites. Id. We believe that BLM's estimates are dangerously misleading. Admittedly, BLM has surveyed less than 5 percent of Jack Morrow Hills' 622,000 acres. Given the isolation of Jack Morrow Hills, as well as its significant locale for cultural and historic resources, BLM should examine in greater detail how "surface disturbing activities" (i.e., mineral development) will impact cultural and historic resources. In short, the lack of a qualitative discussion of impacts falls short of BLM's responsibilities to provide the public with adequate information surrounding the adverse effects associated with mineral development.

Response:

BLM believes it has provided an adequate analysis of effects to heritage resources from all activities within the planning area given the uncertainty of the locations of heritage and mineral resources. BLM's policy is to avoid adverse effects to historic properties whenever possible. BLM requires inventory of all areas of potential effect for heritage resources before authorization. BLM authorizations also include a standard "discovery" stipulation requiring oil and gas developers, ROW holders, and other holders of authorizations to report any unexpected discovery of heritage resources. This stipulation is the BLM's process for implementing 36 CFR 800.13. This "discovery" stipulation occasionally results in situations in which corrective actions must be taken pursuant to the stipulation and developers are usually responsible for the costs of actions required to ameliorate the impacts that could or have occurred to the heritage resource. Furthermore, BLM has representatives inspecting oil and gas, and rights-of-way operations on a continual basis so that other impacts to heritage resources, or any violation of BLM stipulations can be recognized and corrective measures can be taken.

Comment:

BLM's stipulations to protect TCPs and other cultural and historic resources are inadequate to control damaging surface disturbing activities. Under management actions common to all alternatives, BLM provides a surface disturbance buffer of 100 feet for "respected places." supplemental draft EIS at 2-14. A strict stipulation of 100 feet may not be enough to protect the integrity of "respected places." In fact, some respected places may require a much greater buffer, as well as a prohibition against all activities affecting the viewshed.

Response:

The "100-foot avoidance" measure is a minimum standard that comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies only to sites eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity where a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer, and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

Comment:

Cultural and historic properties may also require better stipulations than the preferred alternative offers. For instance, the preferred alternative provides a viewshed restriction of only three miles on either side of the historic trails found in South Pass Historic Landscape ACEC, which includes the Oregon, Mormon, California, and Pony Express Historic Trails. supplemental draft EIS at 2-161. A large part of the national heritage significance of these historic trails is the landscape. Three miles does not adequately control the potential degradation of the historic trials' value.

Response:

Thank you for your comment but the BLM does not agree (see supplemental draft EIS Section 3.2.5.1). The South Pass Historic Landscape ACEC encompasses an area fully ten times larger than the area recommended by the National Park Service for the boundary of the South Pass National Historic Landmark in 1984.

Comment:

Alternative 2 would provide a more reasonable viewshed buffer of 5 miles on either side. Id. BLM should afford the Indian Gap Trail the same stipulations and restrictions that it provides for the other historic trails. In addition, Indian Gap Trail should be added to the Steamboat Mountain ACEC as suggested in alternative 2. See supplemental draft EIS at 2-158. We also suggest that BLM add an additional stipulation that prohibits activities beyond 5 miles that destroy the integrity of the National Historic Trails. In general, we suggest that BLM integrate stipulations that allow for greater limitations on surface disturbing activities to ensure that BLM complies with Section 106 and 110 of the NHPA.

Response:

BLM will continue to research, map, and consult with tribal representatives on Indian Gap Trail through preparation of a Cultural Resource Management Plan. Ongoing consultation with tribal representatives is the most crucial aspect of management of the Indian Gap Trail. In any case where a proposed activity would be within proximity (as determined by the nature of the proposed activity and the description of the historic resource involved), the BLM would initiate consultation with tribal representatives concerning both the significance of the resource and the appropriate disposition of the proposed activity, including mitigation actions.

The BLM analyzed the 5-mile viewshed in the South Pass area under Alternative 2. The 5-mile viewshed was not chosen for the Proposed JMH CAP because the analysis showed that the 3-mile buffer provided adequate protection for the viewshed.

See also response to Comment 100,378.

Comment:

The preferred alternative also opens many significant cultural and historic areas to fluid mineral development, providing only stipulations to control adverse effects. Lease stipulations attached to mineral development in designated areas are incompatible with BLM's Section 110 role as a steward of cultural resources. For instance, the preferred alternative opens White Mountain Petroglyphs, Oregon Buttes ACEC, South Pass Historic Landscape ACEC, Boars Tusk, Crookston Ranch, portions of Steamboat Mountain, and portions of Greater Sand Dunes ACEC outside the WSA, to fluid mineral development. supplemental draft EIS at 2-157. Although these areas would have no surface occupancy (NSO) restrictions, we believe that the value as a part of our national heritage requires that these areas be completely closed to fluid minerals leasing, as is suggested in alternative 2.

Response:

BLM has analyzed the "no lease" option as compared with the "NSO" restrictions and believes managing such areas as NSO, together with other stipulations developed in requisite consultation processes (e.g., with the SHPO), would be adequate to protect heritage values.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. This has resulted in the designation of Area 3 (Appendix 17), which is restricted from any future fluid mineral leasing. Many of the resources listed in the above comment are located in this area. However, valid existing rights will still be honored in this area. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

BLM mischaracterizes its stewardship responsibilities under NHPA as one of preserving "scientific values." Specifically, BLM maintains that its preferred method of mitigation of adverse impacts on sites eligible for inclusion on the National Register of Historic Places (NRHP) is preservation of scientific information (supplemental draft EIS at 2-14). BLM's description of its stewardship responsibility is defective because NHPA requires much more than preserving scientific information. NHPA policy is to preserve our "irreplaceable heritage" because the public has an interest in its "legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits," which must be maintained for future generations of Americans. 16 U.S.C. § 470(b). We are deeply concerned that BLM's gross mischaracterization of its stewardship responsibility not only threatens cultural and historic resources but undermines the Congressional purpose of NHPA.

BLM's stewardship role is found in Section 110 of the NHPA. Section 110 of the NHPA requires BLM to locate, inventory, and nominate properties to the National Register, as well as assume responsibilities for preserving historic properties. See id. § 470h-2(a). BLM should integrate its Section 110 stewardship responsibilities within the supplemental draft EIS itself. Throughout the supplemental draft EIS, BLM recognizes that surface disturbing and disruptive activities could damage, degrade, or destroy "heritage resources." See, e.g., supplemental draft EIS at 4-103. However, in these statements of general cumulative impacts, the BLM fails to examine how it can inventory and institute proactive measures to protect these valuable resources. Although BLM considers better known cultural and historic sites, e.g., South Pass Historic Landscape (including the Oregon Trail, California Trail, Mormon Pioneer Trail, and Pony Express Route), White Mountain Petroglyphs, and the Greater Sand Dunes, BLM does not effectively discuss its stewardship role with respect to historic properties within the process itself. BLM gives little or no mention of its responsibilities at the planning stage. The National Trust believes BLM's stewardship role is not one which begins only at the implementation stage, that is, once cultural resources are threatened by site-specific activities. Instead, BLM's role should be a continuing one, providing guidance throughout the planning process.

Executive Order 13287, which requires each Federal agency to "prepare an assessment of the current status of its inventory of historic properties," expanding on the requirement found in Section 110(a)(2) of the NHPA. Exec. Order 13287 § 3; see 16 U.S.C. § 470(h)-2(a)(2). Additionally, the President has required each agency to "ensure that the management of historic properties in its ownership is conducted in a manner that promotes the long-term preservation and use of those properties." Id. § 4. The supplemental draft EIS should not only take stronger steps to ensure that all designated uses comply with the NHPA, but that BLM has considered and integrated President Bush's proactive stewardship agenda.

Response:

Thank you for identifying an area in the supplemental draft EIS where BLM should more precisely differentiate between Section 106 and Section 110 responsibilities under the NHPA. BLM has added language to Chapter 3 of the final EIS enhancing discussion of the responsibility for federal agencies to identify places eligible for the NRHP and nominate such places to the register.

BLM has specifically identified two important resources that the Proposed JMH CAP would nominate to the NRHP under contextual frameworks being pursued by the Keeper of the Register in cooperation with the Society for American Archaeology: (1) the Finley site, which BLM believes is eligible within the context of the NRHP's "History of American Archaeology"; and (2) the Krmpotich Site, which is eligible within the "Earliest Americans" context.

BLM believes numerous other initiatives in the Proposed JMH CAP, including identification of and development of interpretation for the Indian Gap Trail and the Crookston Ranch, establishment of the West Sand Dunes Archaeological District special management area that encompasses the Finley and Krmpotich Sites and similar depositional environments, maintenance of the South Pass National Historic Landscape ACEC and the White Mountain Petroglyphs ACEC, and recognition of expansion era roads such as the Point of Rocks to South Pass City road are important Section 110 accomplishments. Although more complete inventory would be helpful, the BLM Rock Springs Field Office has chosen to focus its very limited budget of Section 110 funding on these resources and is proud of the successes of our Section 110 program over the past 15 years.

Preparation of the assessment of current status requirements in E.O. 13287 is a BLM Washington Office responsibility and beyond the scope of this planning effort; however, BLM would like to clarify that the provisions of the Executive order must be undertaken within the existing regulatory framework and does not constitute a new law or requirement of federal agencies.

Comment:

BLM's discussion of adverse impacts on cultural and historic resources arising fromOHV use is inadequate, especially with respect to OHV designations in and around known cultural and historic properties. The Preferred Alternative states only that managing travel and access will have beneficial impacts to heritage resources. supplemental draft EIS at 4-101. BLM also states that it will limit OHV use to existing roads and trails, and close WSAs, Boars Tusk, Crookston Ranch, Special Status Plants, Oregon Buttes ACEC, and White Mountain Petroglyphs ACEC to OHV use. However, BLM fails to discuss enforcement in areas closed to OHV use. It is well documented that OHV impacts cultural properties.

Response:

BLM has revised its analysis of the effects of OHV use on heritage resources in the final EIS. Enforcement in closed areas would be conducted by the BLM ranger and Rock Springs Field Office staff.

Comment:

BLM opens all of the Greater Sand Dunes for OHV use without examining the adverse impacts on cultural and historic resources. We believe that designating an area as open for OHV use is an "undertaking" triggering Section 106 of the NHPA.

A record of decision (ROD) would in effect be approval of OHV use, and thus, would constitute an undertaking. Given this, BLM must conduct a Section 106 review of Greater Sand Dunes to determine whether there are cultural and historic resource that are on the National Register or eligible, examine adverse impacts associated with OHV use, and then seek to mitigate the impacts. However, first BLM must complete and an adequate and comprehensive inventory of historic and cultural resources. Without an inventory of these resources it is not possible for the BLM to comply with the NHPA or NEPA.

Response:

The BLM does not agree that OHV designations constitute an undertaking pursuant to Section 106. The BLM is charged with determining whether an activity is an undertaking. The SHPO is party to this planning process and has not objected to this determination. The Greater Sand Dunes Recreation Area, which is open to OHV use, is restricted to the shifting sand portions of the dune field and contains a specified boundary. Before designating this area as open, cultural clearance for the area was obtained.

Comment:

Determine what Native American tribes historically inhabited the Jack Morrow Hills area and make a "reasonable and good faith effort" to inform them of the supplement draft EIS. BLM should also give this extended list of tribes an opportunity to provide input regarding traditional cultural properties and other cultural and historic resources that may be present. In particular, BLM should allow the Comanche, Eastern Shoshone, Crow, Blackfeet, and other Native American tribes to address their concerns.

Response:

Clarification on which tribes historically inhabited the planning area has been added to Chapter 3 of the final EIS. BLM will continue its ongoing consultation efforts with appropriate tribes. Any and all tribal people are allowed to express their concerns during the scoping and public review aspects of all BLM environmental planning processes. BLM consulted specifically with those tribes known through historical documentation to have had continuous and long-term residence in the planning area.

Comment:

Before issuing a final EIS, BLM should conduct a more detailed inventory of cultural and historic resources. BLM should then provide Native American tribes and other interested parties an opportunity to provide comments regarding any conflicting uses that could impact the new detailed inventory.

Response:

BLM concurs that it is always better to have more inventory, whether the information is gathered under the auspices of Section 110 (of the NHPA) or for any other purpose; however, NEPA requires only that the best available science and information be used. As new information is obtained on heritage resources within the planning area, BLM will incorporate this into its monitoring strategy and consultation efforts. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

BLM should consider closing areas designated as having a low potential for mineral development. Given that BLM has inventoried less than five percent of the Jack Morrow Hills area, it would make more sense to close low potential areas until BLM can determine whether other resource values exist, including cultural and historic.

As an alternative to the above comment, BLM should institute specific stipulations for low and moderate mineral potential areas that would limit, if not prohibit, mineral development where cultural and historic resources are identified. The stipulations should clearly state circumstances in which BLM may choose to prohibit mineral development to ensure cultural and historic resource protection.

Response:

The BLM does not agree that it should be necessary, nor that it would be appropriate, to exclude areas of low mineral potential from any particular use (mineral development or otherwise) until large area cultural resource inventories are conducted. BLM has processes in place for inventorying areas of potential effects of BLM undertakings pursuant to the Section 106 process, including associated agreements among the BLM, Wyoming SHPO, and Advisory Council on Historic Preservation. Areas that have not been inventoried cannot be affected by a BLM undertaking until inventory is completed to the level appropriate for use in consultation with the Wyoming SHPO pursuant to Section 106.

Comment:

Integrate compliance with Section 110 and President Bush's "Preserve America" Executive Order in a revised supplemental draft EIS.

Response:

BLM has specifically identified two important resources that the Proposed JMH CAP would nominate to the NRHP under contextual frameworks being pursued by the Keeper of the Register in cooperation with the Society for American Archaeology: (1) the Finley site, which BLM believes is eligible within the context of the NRHP's "History of American Archaeology," and (2) the Krmpotich Site, which is eligible within the "Earliest Americans" context.

BLM believes numerous other initiatives in the Proposed JMH CAP, including identification of and development of interpretation for the Indian Gap Trail and the Crookston Ranch, establishment of the West Sand Dunes Archaeological District special management area, which encompasses the Finley and Krmpotich Sites and similar depositional environments, maintenance of the South Pass National Historic Landscape ACEC and the White Mountain Petroglyphs ACEC, and recognition of expansion era roads

such as the Point of Rocks to South Pass City road are important Section 110 accomplishments. Although more complete inventory would be helpful, the BLM Rock Springs Field Office has chosen to focus its limited budget of Section 110 funding on these resources and is proud of the successes of our Section 110 program over the past 15 years.

Preparation of the assessment of current status requirements in E.O. 13287 is a BLM Washington Office responsibility and beyond the scope of this planning effort; however, BLM would like to clarify that the provisions of the Executive order must be undertaken within the existing regulatory framework and does not constitute a new law or requirement of federal agencies.

Comment:

Conduct Section 106 of the NHPA review for OHV open areas. In particular, designating Greater Sand Dunes as an OHV area could threaten cultural and historic resources.

Response:

The Greater Sand Dunes Recreation Area, which is open to OHV use, is restricted to the shifting sand portions of the dune field and contains a specified boundary. Before designating this area as open, cultural clearance for the area was obtained.

Comment:

Close White Mountain Petroglyph ACEC to hunting as these resources are sensitive and vulnerable to vandalism. Often warrior shield are used for target practice.

Response:

Hunting areas are under the jurisdiction of the WGFD. However, BLM is now developing a site-specific management and development plan for the White Mountain Petroglyphs and does have authority to prohibit activities such as shooting in developed recreation areas, which the White Mountain Petroglyphs site would become.

Comment:

Clarify the application of new stipulations to preexisting leases.

Response:

Preauthorization inventory (applicable to APDs and ROWs) and Section 106 consultation, including Native American consultation (where appropriate), provisions apply to development of all preexisting leases. COAs for protection of sites can be applied following site-specific analysis (see page 2-83 and Appendix 14 of the supplemental draft EIS).

A-19.12 Travel, Access, and Realty Management

Comment Number: 18

Comment:

No new road building should be allowed. I ask for any projects that require new road building to be dropped. We have scarred our public lands with roads, and the effects have been devastating. Access should be guided by the idea of having as a remote experience as possible. So access will be by foot to many areas. This is better for the natural resources and is a form of recreation that is ironically becoming more popular and desired as the areas that provide this experience dwindle.

Response:

New activities that require a road will need to conform to the transportation plan and management objectives in that area. Therefore, if a road is required, it will be better mitigated and engineered, addressing issues such as drainage and location.

Comment Number: 39

Comment:

Motorized travel should be restricted to designated roads and should be kept out of Wilderness Study Areas all together. Existing nondesignated roads should be closed to traffic and reclaimed to a natural state. Maps should be posted at entrances to the Jack Morrow Hills to facilitate visitors in their tour of the region so that they will not be tempted to drive off roads. Roads should only be allowed in areas where they will have the least environmental impact.

Response:

The Preferred Alternative in the supplemental draft EIS provides for all the above.

Comment Number: 100,145

Comment:

When the Surface Management maps were updated in the early 80s, a large number of existing trails were omitted. I understand that these were roads that someone wanted closed, but they are still there. Also, the snow removal policy needs to be flexible.

Response:

BLM is not sure why certain roads and trails were omitted on the surface management maps. BLM realizes that much work is needed to inventory and evaluate the road and trail network in the planning area. BLM believes that the area provides the public with an abundance of access needs that have to be evaluated with the adjoining resource concerns. The BLM Field Manager will evaluate snow removal needs on a case-by-case basis considering resource issues.

Comment Number: 100,332

Comment:

Page 2-79, Geophysical Activities: These activities are permitted within ¼ mile of historic trails, not ½ mile. These activities rarely leave any trace of their presence after one growing season. These activities help select the prospective areas, thus eliminating other areas from any disturbance.

Response:

This action is subject to the Green River RMP ROD that states—"Geophysical activity will be restricted or prohibited within a ¼ mile or visual horizon of historic trails (which ever is closer) to protect trail integrity. Vehicles used for geophysical exploration or similar activities could be allowed to cross and drive down historic trails, provided a site-specific analysis determines that no adverse effects would occur." The Green River RMP also states for the South Pass Historic Landscape: Generally, vibroseis activity and shot hole activity are prohibited on and within 300 feet of the historic trails. Other geophysical operations may be allowed within the historic trails corridors (about 16.42 miles) if site-specific analysis determines that no effects adverse to the visual and historical integrity of the trails will occur.

The ½ mile discussed on page 2-79 is the distance set to protect the Pinnacles geologic feature from seismic activity.

Comment:

Page 2-133 Rights of Way: What is a ROW exclusion and avoidance area? Does this mean that if you were actually able to find a well, that you may not get permission to lay a pipeline market?

Response:

ROW exclusion areas are defined as an area in which future ROWs may be granted only when mandated by law. A ROW avoidance area is defined as an area in which ROWs may be granted only when no feasible route or designated right-of-way corridor is available. Locating pipelines and other ROWs would be considered as a part of the transportation planning for the area. An exclusion area is where future ROWs may be granted only when mandated by law. Each ROW would be considered and analyzed on a case-by-case basis considering all the resource issues along the route. Deviations from the proposed route could occur depending on the resource concerns identified in the specific NEPA document.

Comment:

Map 49 Preferred Alternative, Rights-of-Way Limitations: Does the lighter gray area labeled avoidance areas mean that gas pipelines or roads could not be constructed in these areas? If so, how would a successful gas well get the gas to market? Comparing this map with Map 55 shows that many presently held leases could not have pipelines from wells producing on their leases. Even roads to the wildcat might be restricted.

Map 65, Existing Roads, shows that this area is hardly pristine. It should also be noted that these roads are not the result of oil and gas activity.

Response:

The avoidance areas mapped on Map 49 in the lighter gray areas show the locations of the resource concerns labeled on the left side of the map. ROW proposals would have to mitigate impacts to resources listed as a concern to be approved.

It would be difficult to say who developed the vast network of two-track trails in the planning area over the last 100 years. However, two-track trails are not developed roads and are not maintained. Because there is a minimal amount of developed and maintained roads and much of the area is closed to vehicle use naturally during the winter, the planning area has healthy habitats, stable wildlife, and plant populations.

Comment Number: 100,376

Comment:

Based on this language, as well as the enormous potential for damage posed by the use of OHVs, we urge BLM to require the following:

- The JMH CAP should prohibit OHV use unless routes are specifically marked and
- designated as available for that use (i.e., BLM should adopt a "closed unless posted open" policy).

- Trails designated as open should be clearly marked so that all users will be aware of where OHV use is and is not allowed (this will also assist in effective law enforcement).
- The JMH CAP should implement effective, frequent monitoring of OHV impacts, and set clear benchmarks which, if exceeded, trigger closure of an area to OHVs. If monitoring and enforcement cannot be effectively accomplished due to lack of personnel or resources, the JMH CAP should decrease use commensurately.
- Riparian areas and wetlands are of critical importance to the biological functioning of the planning area and are exceedingly rare. OHVs, except on designated trails, are not appropriate in these fragile ecosystems.

Response:

The "closed unless posted open" OHV use suggestion is not BLM policy and is *currently* being debated by other agencies in Wyoming on its usefulness. Some problems exist with this signing method, such as vandalism and naturally damaged signs (weather and animal rubs), which leave the public to interpret or judge what is the right thing to do.

BLM agrees that signage is a useful education and information tool. Appropriate signs should be maintained and monitored. However, we are also concerned that too many signs within an area may not only detract from the visual values but also be used as raptor perches in sage-grouse areas.

BLM agrees that an increase is needed in monitoring, education, and enforcement of OHV use and that other strategies need to be implemented to limit resource degradation from this use.

Comment:

The current Green River Resource Management Plan promises completion of travel management plans for the Resource Area, but thus far BLM has failed to fulfill this pledge. In the interim, OHV use has been permitted on "existing" trails. This practice is unacceptable. We fear that another ten years will go by without BLM meeting its obligation under the Executive Orders and regulations to ensure that "OHV areas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands."

During this planning process, BLM should evaluate the road system in the planning area and determine the minimum system of routes necessary. Based on that analysis, BLM should close redundant routes; roads with no destination or purpose; illegal, "ghost," or "wildcat" routes; and roads in sensitive areas. The JMH CAP should make these closures immediately effective, provide for the reclamation of closed routes, and ensure sufficient funding for reclamation, monitoring, and enforcement. These provisions are consistent with and required by the Riparian-Wetlands Initiative, Executive Orders, and other law.

Where public access to public lands is illegally denied by private users, BLM must ensure that the public's ability to use and enjoy these lands is enforced.

Response:

Although a vast network of two-track trails exists in the planning area, BLM has always had the authority to close routes that cause resource damage or no longer serve any purpose. BLM has done this in the Sand Dunes and Oregon Buttes area.

Travel management activity planning would include public involvement and analyze the level of detail described in this comment. Travel management planning is dynamic and is anticipated to change as

resource demands and uses change. The guidance in Appendix 12 would be used in developing transportation plan.

BLM is unaware of any situation in the planning area in which access to public lands is illegally denied by private users.

Comment Number: 100,379

Comment:

You must refine and enforce a travel plan for the JMH. Both steps will be difficult if permitted routes have not been clearly marked in the past or where ATVs have grown accustomed to pioneering routes.

Response:

The JMH CAP calls for travel management planning in key areas. Education is a key component for proper use of ATVs.

Comment Number: 100,380

Comment:

The BLM should adopt a "closed unless open" policy to allow OHV use only on roads, trails, and routes designated and posted as "open." Cross-country OHV travel should be prohibited.

This signage method is the best way for motorists to learn and know where they are allowed to go. The open routes should be designated only after a study determines that the routes will not cause adverse environmental impacts. "Existing" routes should not automatically become open routes under a new management plan. In many cases existing routes were developed by unauthorized dirt bike and other OHV users.

The BLM needs to stop building new OHV routes until those routes found to be compatible with a new, sound BLM OHV use management plan are monitored and maintained. Damaging routes must be restored to nonmotorized use. OHV use should be prohibited unless adequate monitoring and enforcement of the use and impacts are fully funded and implemented.

OHV use should be prohibited in legislatively or administratively proposed wilderness areas, roadless areas, and Wilderness Study Areas. The damage, noise, and pollution from dirt bikes and other OHVs are ruining some of these precious areas of Wyoming and across the country.

Motorized use should not be the "Preferred Use" for our public lands. Reasonable use with reasonable restrictions are needed.

Response:

Please see response to comment number 100,376. BLM has not built OHV roads and trails in the area. In the JMH CAP area, WSAs, sensitive plants, and cultural sites are closed to OHV use. Responsible OHV use is a legitimate use of the public lands, as is hiking, horseback riding, and other recreational use.

Comment Number: 100,385

Comment:

The Preferred Alternative allows for limited OHV use in South Pass Historic Landscape and Steamboat Mountain to designated roads and trails (see supplemental draft EIS at 2-135). BLM maintains that the Green River RMP OHV management prescriptions will apply to Jack Morrow Hills. Id. At 2-79. However, these prescriptions may not be adequate to prevent adverse impacts caused by OHV use. BLM should apply the Alternative 2 designation for South Pass and Steamboat Mountain, which closes OHV use to areas considered ACECs or SMAs. This is the more reasonable designation for South Pass and Steamboat.

We believe that BLM has not adequately addressed how it intends to prevent OHV use in and around restricted areas and areas where OHV is prohibited. With respect to cultural and historic properties, OHV use can lead to destruction and vandalism. Although the preferred alternative closes ACEC areas and other special management areas to OHV, these areas allow some degree of mineral development. The BLM admits that right of ways (ROW) associated with mineral development in proximity to ACEC areas and protected respected places, as well as communication sites and salable minerals operations, could disturb and affect the setting of these properties (supplemental draft EIS at 4-102. BLM). However, the supplemental draft EIS fails to adequately address how it will deal with OHV disturbances associated with new ROWs.

BLM quantifies surface disturbance caused by mineral development, but goes no further to describe indirect disturbances associated with the development of new access roads. Undoubtedly, new roads will increase the likelihood of OHV use, whether restricted within an area or not. OHV use could certainly led to adverse impacts on recorded and unrecorded cultural and historic resources. BLM should discuss such impacts, direct and indirect, within the supplemental draft EIS, as associated with specific designations. Additionally, specific methods for controlling OHV use within Jack Morrow Hills need to be implemented.

Response:

The analysis of impacts shows that management under the Proposed JMH CAP is adequate for protection of resources within the South Pass Historic Landscape and Steamboat Mountain. The monitoring strategy for the planning area (Appendix 17 and Appendix 9) will identify potential impacts to resources and determine appropriate mitigation measures.

All areas in which OHV use is prohibited or restricted are marked. Enforcement of trespass with regard to OHV use is the responsibility of BLM Law Enforcement Rangers.

Comment Number: 100,432

Comment:

The BLM proposes limitations on geophysical seismic acquisition activity that includes limits on vehicle use and eliminating or restricting the use of explosives in areas. The BLM already requires a site-specific operating plan for any seismic permit application that provides for any necessary limitations specific to the area covered. There is no need to close off entire areas to geophysical exploration when the existing process for permit approval adequately ensures protection on an as is needed, site-specific basis.

Response:

BLM believes that additional mitigation measures are needed in the JMH CAP that are not covered by the existing geophysical regulations. In addition, some of the areas with limitations were identified in the Green River RMP.

Comment Number: 100,452

Comment:

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS).

This is a vast area and it will be largely uncontrolled and unregulated for off-road vehicle abuse. These companies that are going to drill are going to bring this abuse into the area. If anybody here has been to a lot of the petroleum developed areas between Rock River and Rawlins, you'll notice that there is very little regulation in these desert areas.

Response:

BLM's regulations for OHV use in the JMH CAP provide for responsible and reasonable use. Unauthorized use, such as random cross-county travel, is an education and law enforcement issue.

Comment Number: 200,011

Comment:

I am against the restricted access proposed in the alternative as we currently have adequate wilderness areas preserved with limited access. Why protect things like the Pony Express and the Oregon Trail if the average person cannot have access to them through appropriate road construction and maintenance?

Response:

Vehicles are allowed to drive the NHTs within the planning area. Blading and maintaining the Oregon Trail would jeopardize the historical integrity of this resource.

Comment Numbers: 200,014; 200,026

Comment:

All vehicles should be restricted to designated roads. New roads and developments in roadless areas should be prohibited.

Response:

Travel management plans in sensitive areas would identify and analyze what roads and trails are needed.

Comment Number: 200,027

Comment:

Road building has been identified in peer-reviewed scientific journals as a prime factor in habitat fragmentation, stressing ecosystem functioning, costing the taxpayer money in terms of lost ecosystem productivity, species out competing native plants, and changing the natural fire regime.

Response:

Please see response to comment number 200,014.

Comment Number: 200,049

Comment:

Please act in concert with the RS 2477 congressional letter to the Department of the Interior, led by Representative Mark Udall (CO). I want you to not process RS 2477 claims under the new disclaimer regulations.

If any RS 2477 claims are to be processed, the Department of the Interior must adopt standards to assess the validity of these bogus highway claims. No such standards are in place. This is a highly irresponsible policy, which will do nothing more than create confusion and litigation.

Please do not abandon existing policy, which offers state and local governments a fair opportunity to submit realistic and potentially valid RS 2477 claims under existing law.

Response:

Any RS 2477 assertions are addressed through the 1997 Departmental Policy, which requires demonstrating a compelling and immediate need, along with meeting the criteria. Secretarial approval is still required to have a RS 2477 claim determination. An RS 2477 claim must first be processed before processing a recordable disclaimer.

Comment Number: 200,145

Comment:

Consider banning all forms of ATVs from the entire area.

Response:

Responsible OHV use is a legitimate form of recreation on public lands. BLM is working to educate users on appropriate uses of all terrain vehicles (ATV).

Comment Number: 200,223

Comment:

The proposed restrictions on geophysical activities are also extreme. Evidently, BLM is attempting to placate special interest groups by subjecting geophysical activities to the same restrictions imposed on off-highway vehicle use. PLA reminds BLM that seismic activities in this area leave no long-term impacts. In fact, BLM's 3150 Manual compels operators to prepare a site-specific mitigation/operating plan before beginning seismic operations. Therefore, it is unwarranted for BLM to limit a use that is subject to a myriad of rules and regulations and a permitting process in the same manner as a use that is not subject to the same requirements. We strongly recommend that BLM revise its proposed management of geophysical activities, taking into account the limitations already enforced.

Response:

Geophysical activity prescriptions in the Proposed JMH CAP are subject to the same limitations as rights-of-way. Exploration activities would be allowed in sensitive resource areas only if they can be performed with acceptable mitigation of impacts.

A-19.13 RECREATION RESOURCES MANAGEMENT

Comment Numbers: 21; 26; 34

Comment:

It is of my opinion that the Green River RMP Amendment definitely needs to include OHV friendly modifications for the Greater Sand Dunes areas. Back when first introduced, The Green River Resource Management Plan closed the Sand Dunes and Buffalo Humps Wilderness Study Area (WSA) to motorized vehicles. The Sand Dunes and Buffalo Hump Wilderness Study Areas have long been recognized by academia and the public of being unique and valuable lands. Does this mean they should be off limits to OHVs and public use? NO! Proper management is the key! Not closure!

From Appendix 2 of GREEN RIVER LAND USE PLAN (S) OBJECTIVES AND ACTIONS:

Western Portion SAND-18–The western portion of the Greater Sand Dunes area is bounded on the east by the Sand Dunes WSA boundary and on the west by the Greater Sand Dunes ACEC boundary. SAND-19–The portion of the area that overlaps the WSAs is closed to OHVs, including over-the-snow vehicles and some mechanized vehicles, to maintain the unique naturalness, solitude, and primitive and unconfined recreational opportunities.

This area is very similar to the St. Anthony WSA in Eastern Idaho, which is also managed by the BLM. I'm looking for some consistency as to how our public lands are being managed! OHV use is allowed in many Areas of Critical Environmental Concern (ACEC), including the entire Saint Anthony dunes system. WSA designation does not automatically preclude OHV use either. The mandate to the agency is to preserve the wilderness characteristics of a WSA, and OHV use on ever-shifting sands certainly doesn't permanently alter those characteristics. All evidence of mans intrusions are erased by these ever-shifting sands within a matter of minutes. Excluding over-the-snow vehicles is absolutely ludicrous, as once the snow melts, there is no evidence left behind.

I hold the BLM responsible for PROPERLY managing my public lands, NOT closure! I would highly recommend this be investigated and changes made accordingly regarding opening these closed areas for public OHV use in this amendment.

Response:

WSAs are a nondiscretionary closure area for OHV use. As outlined in BLM Handbook H-8550-1, *Interim Management Policy for Lands Under Wilderness Review*, no mechanized activities are allowed within existing WSAs. The Greater Sand Dunes recreation area is entirely open to OHV use under all alternatives in the final EIS.

Comment Number: 22

Comment:

My name is Jason Wirth, and I'm the parts manager at Chico Honda Motorcycles in California. It has come to our attention that there are lands currently closed to OHV use, and the BLM may close more. Proper management of the land and resources of Utah is vital to the growth of the tourism and off road community. In recent years, off-roaders have become vigilant in environmental issues, learning to respect and leave nature as untouched as reasonably possible. California's BLM is currently facing more than one lawsuit brought by OHV users and businesses that they support. These lawsuits charge mismanagement and premature closure of land for reasons that hold to legal weight. These closures have prompted families to vacation and camp in other places, costing the California economy an enormous amount of

money. We hope that the Utah BLM will make an effort to work closely with all individuals involved and make land decisions based on the masses and true environmental issues, as opposed to scare tactics and misinformation often used to close the publics land.

Response:

There are no Utah lands in the planning area.

Comment Number: 24

Comment:

I wish to voice my concern of the closed portions of the sand dunes. I feel that a study needs to be done to validate the closure. I, along with many others, feel that the Killpecker Sand Dunes area is a great resource and could be a great draw for tourism for the area. I am glad to hear that no more of the land will be closed; however, I would like to see more of the sand dunes opened up to OHV use.

Response:

A large portion of the Killpecker Sand Dunes is a nondiscretionary closure area for OHV use because it is part of the Sand Dunes WSA. As outlined in BLM Handbook H-8550-1, *Interim Management Policy for Lands Under Wilderness Review*, no mechanized activities are allowed within existing WSAs. The Greater Sand Dunes recreation area is entirely open to OHV use under all alternatives in the final EIS.

Comment Number: 25

Comment:

I have recently become aware of the Green River RMP amendment that you are considering in your State for the purpose of reviewing restrictions on the sand dune area located in the south west corner of Wyoming. I feel as though this is a great opportunity for recreational activities in your State and could increase commerce for the merchants in the local area. Many large sand dune areas in other States, including Oregon, California, Arizona, and others, operate recreational dune areas for off highway vehicles. These events attract a large amount of tourism and some small economies thrive on this business. Most of these areas that require maintenance are cared for by local OHV clubs, with agreements with the local BLM. Costs for operating such areas could not be much more than the cost of enforcing the closure of these public lands. I encourage you to take this opportunity to consider the impact on the residents of Wyoming and the tourism that the use of this area will provide.

Response:

The Proposed Plan allows for OHV use in the Greater Sand Dunes recreation area and maintains a designation of limited to existing or designated roads and trails in the remainder of the planning area, except for those areas closed because of WSA designation or other sensitive resources. Impacts of these closures are discussed in Chapter 4 of the final EIS.

Comment Number: 100,156

Comment:

A major concern to us personally is that areas should be well marked when they are off limits and that maps, CLEARLY MARKED, should be readily available at all BLM offices for those wishing to use the area for recreational use, whether motorized or not.

Response:

Signing is currently used to indicate areas that are off limits to motorized use. Maps are available at the RSFO that clearly illustrate recreation opportunities and restrictions within the planning area.

Comment Number: 100,240

Comment:

Increased recreational use of the area may have a negative impact. The BLM will need to analyze the recreational impacts and provide management prescriptions to maintain the multiple use balance for the area.

Response:

Impacts to all other resource programs resulting from recreation activities are discussed in Chapter 4, Environmental Consequences, of the supplemental draft EIS and final EIS.

Comment Number: 100,378

Comment:

Recreation visitor days are not tracked specifically for the Jack Morrow Hills (JMH) area. Instead, these figures were generated from extrapolating from the BLM Recreational Management Information System (RMIS), using the database from the Rock Spring office. I will later raise a concern that BLM's analysis fails to take into account the outfitter/guide operations based in Lander that use the northern part of the JMH CAP planning area. Using data as well from the Lander BLM office might have provided a more balanced picture of recreational use.

Response:

The Lander Field Office does not keep information about recreation uses in the planning area.

Comment:

The BLM summarizes its data for annual recreational use of the Jack Morrow Hills in its section 3.4 Recreation Resources. Although it states, that "Estimated recreational use within the planning area is summarized in Table 3-18," this table is incomplete. This tables shows 16,308 Recreational Visitor Days (RVDs) for off-highway vehicle (OHV) use, and another 5,419 RVDs for what they term "dispersed recreational activities," including backpacking, camping, rockhounding, driving, etc. Hunting is not included on this table.

Two pages later in Section 3.4.3, the BLM contradicts itself by stating, that "using the RMIS database, it was estimated that individuals spend approximately 11,800 RVDs participating in these dispersed recreational activities [non-hunting or OHV use] in the planning area on an annual basis."

Response:

All RMIS data entered for the planning area is entered in the RSFO because all of JMH is in RSFO. Hunting is discussed in Table 3-19 on page 3-36, Section 3.4.2, of the supplemental draft EIS. Although hunting is considered a recreation activity, it is not the only recreation activity included in the recreation program.

Comment:

The BLM estimates hunting recreational use from data obtained from the WY Game and Fish Department. Table 3-20 summarizes estimated average hunting days, but they state these hunting units are not comparable with other BLM recreation days. They estimate 3,072 annual hunting days in the JMH CAP planning area for elk, mule deer, antelope, and sage-grouse.

The BLM's hunting days appear low to me compared with data I obtained from the Game and Fish as well. For example, the BLM assumes that only 70% of hunting for the Steamboat elk herd occurs in the area, producing only 183 days of elk hunting, whereas the other G&F data shows an average of 330 hunters for the 302 elk harvested for the entire herd.

Response:

Estimates of annual average hunting days for pronghorn and mule deer were revised in Table 3-20 (Table 3-23 in the final EIS) to reflect the percentage of hunting in JMH as reported by the WGFD. The changes in hunting days are also reflected in the economic impact analysis in the final EIS.

Comment Number: 100,456

Comment:

Road construction and development have created abundant areas where motorized recreation can occur. Because the supply of roaded areas exceeds present and future demand for motorized recreation opportunities, converting undeveloped areas to roaded areas would have a significant adverse impact on primitive and SPNM recreation opportunities.

It should be kept in mind that this map of important non-motorized recreation opportunities is not based on BLM's Recreation Opportunity Spectrum (ROS) classifications for the area. This is because the ROS classification does not reflect on the ground conditions or potential recreation opportunities, but is based on allowed recreational uses, such as off-highway vehicle (OHV) use areas.

Response:

There are no primitive areas under the ROS designation in the planning area. Areas currently in the ROS that are classified as semi-primitive non-motorized (SPNM) are those areas in the WSAs. No new road construction is permitted in these areas. No discussion in the proposed plan suggests converting existing SPNM into semi-primitive motorized (SPM) areas.

Comment Number: 100,459

Comment:

We want to be able to continue to offer our students high-quality outdoor education experiences, and we are very concerned that expansion of energy development proposed under all of the Alternatives will impair our ability to do this. As written, none of the Alternatives assure adequate protection of large areas of undisturbed open space that we need to continue to run high-quality horses. We believe that it is vital for the BLM to preserve and support opportunities for other education and responsible recreation.

Response:

The supplemental draft EIS evaluated all options in detail to assure a balanced approach was recommended that allows opportunities for mineral exploration and production and for the BLM to protect the resources and resource uses. The monitoring strategy for the planning area (Appendix 17 and

Appendix 9) will be used to identify impacts to resources and determine appropriate mitigation measures In addition, as exploration and production activities proceed, impacts (short and long term) will be evaluated in subsequent NEPA documents.

Comment:

Recreation is a significant economic impact and contributor to the State of Wyoming. And it is part of the important contribution that the BLM's Preferred Alternative does not consider. The types of recreation include the hiking, wildlife viewing, hunting, and outfitting. The Preferred Alternative does not recognize the second and the highest economic contributor to the state. In 2000, $1.1 million was spent on hunting, fishing, and trapping in the state of Wyoming. In Jack Morrow Hills, specifically, in 2000, $3.9 million was spent hunting mule deer, antelope, elk, and sage grouse, just in JMH. These are significant amounts of money. We're not talking about thousands of dollars. And just this week, our Governor stated that $1.8 billion of tourism dollars was spent in this state last year. The BLM needs to consider other economic contributions that come on public lands.

Response:

The supplemental draft EIS evaluated all options in detail to assure an approach was recommended that balances resource uses and protection of resource values. The supplemental draft EIS does evaluate the economic impacts of changes in recreation activities under each alternative in Section 4.12, including changes in recreation activities with increased oil and gas development. The list provides information on "restitution" values set by WGFD and does not represent actual expenditures in the local economy and cannot be used to estimate economic impacts for JMH.

Comment:

I reviewed the JMH CAP and was struck by the feeling that the BLM views multiple use to mean only oil, gas and mining, leaving other recreational values and recreational uses, such as hunting, in the back seat.

Response:

BLM manages for multiple use and the Preferred Alternative provides for a balance of resource uses in the planning area.

Comment Number: 200,180

Comment:

We would request consideration for allowing recreational prospecting in this area, especially near the South Pass section. We would also like to be able to do metal detecting and rock hounding activities around the Kinney Rim area.

Response:

Kinney Rim is not in the planning area and was therefore not addressed in the supplemental draft EIS. Recreational prospecting is allowed under the Proposed JMH CAP.

Comment Number: 200,223

Comment:

It is counterproductive for BLM to impose inordinate restrictions on the oil and gas industry while ignoring the broad negative impacts often associated with unconstrained recreation activities. BLM is demonstrating prejudice toward oil and gas activities that are already highly regulated to ensure they are

conducted in an environmentally sound manner. The same is not true for many recreation activities. We strongly recommend that BLM reconsider its management proposal for JMH to ensure equitable management of all resource uses and activities.

Response:

BLM does regulate recreation activity within the planning area. Some portions of the planning area are closed to OHV use, whereas other sensitive areas are limited to existing or designated roads and trails. Camping is also regulated with respect to water locations, and areas would be closed to camping if resource damage occurs. Special recreation use permits within the planning area must also be consistent with the plan objectives before any actions. For additional information on recreation management, see Chapter 2 of the JMH CAP final EIS.

A-19.14 MINERALS AND ALTERNATIVE ENERGY RESOURCES MANAGEMENT

Comment Number: 11

Comment:

This area has some unique deposits of gold, and to my knowledge, their origin has not been determined. If the area is shut down to mineral activity, I'm sure this will include gold mining. What will become of the existing claims that are in place already? There is a big portion of the north east corner that have existing claims in it, my claim being one of them, and I wouldn't like to see it shut down.

Response:

Your statement regarding the origin of the gold deposits is correct. Extensive studies of the region have not been conducted. Several alternatives have been considered from a development alternative to a preservation alternative. However, the Preferred Alternative states that recreational mining activity would be allowed in those portions of the planning area that are not withdrawn. Simply put, this means that the existing claims will not be "shut down."

Comment Numbers: 100,025; 100,058

Comment:

I believe that you should delay the environmental analysis of new gas projects until the Management Plan is complete. The current RMP fails to evaluate impacts of Coal Bed Methane, which are severe. Areas along the Wind River Front should be CLOSED to coal bed methane drilling due to grazing and water concerns.

Response:

The Wind River Front is outside the planning area for this document. However, the Green River RMP closed the area to all fluid mineral leasing. The impacts from coalbed natural gas development were analyzed in Chapter 4 of the Green River RMP and JMH CAP. Additional site-specific analyses will be conducted on a case-by-case basis as developments are proposed.

Comment Number: 100,037

Comment:

I find it difficult to understand why the area is open season to coal methane exploration. Give less attention to leasing just for the sake of responding to today's demands at the expense of wildlife habitat, winter ranges and other long-term natural assets of the Red Desert.

Response:

The area is not "open season" to coalbed natural gas exploration. The supplemental draft EIS only allows for 50 CBNG wells to be drilled over a 20-year time frame. Coalbed natural gas wells are subject to the same rules and regulations as conventional gas wells.

Comment Number: 100,059

Comment:

If large numbers of oil and gas wells are going to be placed into the Red Desert, I would like the wells to be grouped, using directional drilling to lessen the visual impacts that all wells produce. By grouping these wells, it would also reduce the need for higher numbers of roads and pipelines that again scar the visual landscape and reduce the existing small amount of vegetation, thus impacting the wildlife. I would also hope that the wells be banned near the roadless areas. I also support prohibiting construction of new roads if a proposed well footprint could be shifted in order to be accessed from an existing road. If this is not possible, the older road should be reclaimed so as not to have redundant roads in the area.

Response:

It is standard operating procedure to use existing roads when available. Directional drilling is considered where possible and is one of many mitigation measures used in the planning area. However, directional drilling is not always possible given geology and certain technical issues. The drilling company in consultation with BLM ultimately decides the method of drilling.

Comment Number: 100,106

Comment:

Two problems I had with the analysis the BLM performed on the draft EIS and which I request you address in the final EIS are: There needs to be serious in depth analysis and quantification of what it would take and cost to compensate current leaseholders in sensitive parts of the JMH CAP planning area. Are these leaseholders of the sort who have leases elsewhere in Wyoming and could be compensated through royalty payment credit or lease due credits elsewhere? Please answer in final EIS.

Response:

The buyout option was analyzed in Alternative 2. Buyout or exchange of existing leases from willing sellers may be considered on a case-by-case basis.

Comment:

The adaptive management program that the Preferred Alternative imposes needs more definition and strict requirements. How will BLM make sure development numbers stay below the estimated well pad numbers provided in the supplemental draft EIS for analysis purposes? What mandate and authority will BLM use under Adaptive Management program to prevent more development should monitoring indicate loss in steamboat elk population numbers, failure in reclamation, water quality, impacts, etc.? How will

citizen's oversight of the adaptive management program be ensured? Please answer all these questions with more detailed information in final EIS.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,183

Comment:

BLM must honor existing leases within the planning area. Furthermore, BLM must offer lands for lease within at least a one-mile radius of these existing leases. It has already been determined through the Interior Board of Land Appeals that "the close proximity of lands unavailable for leasing prevents the development of existing leases." I strongly urge you to honor this verdict by IBLA in Prima vs. BLM (Docket #96-415).

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Please refer to the updated version of Appendix 17 in the final EIS for details.

The verdict by IBLA in Prima vs. BLM deals with Suspension of Operations of leases. In the Opinion by Administrative Judge Grant, it states that "leases should not expire due to the unavailability of adjacent or commingled unleased federal lands necessary for the logical exploration and development, and that a Suspension of Production is properly granted when a lessee is unable to explore, develop, and produce leases because of the proximity or commingling of other adjacent federal lands needed for logical exploration and development that are currently not available for leasing."

Comment:

BLM's suggestion of "staged mineral development" is unacceptable. The very workings of the oil and gas industry prevent this philosophical utopia from occurring. Exploratory wells are generally drilled far apart by unaffiliated companies. Once a new field is discovered, development then occurs in a very small area. In most cases, a company may only own leases in a small portion of the planning area. To limit activity to "stages" would harm a company from exercising its rights to develop its leasehold in a prudent manner. Funding for BLM to complete studies associated with "staged development" is not defined or insured and therefore should not be considered.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The number of wells proposed in the Preferred Alternative is 200 wells over a 20-year period or an average of 10 wells per year. Assuming a success rate is 1 in 10 and an average disturbance of 3 acres per drill site, oil and gas activity will temporarily disturb 30 acres per year and have a long-term disturbance of 3 acres per year. All this occurring in a 622,000-acre planning area is hardly significant. I would encourage you to increase the number of allowed wells to 500.

Response:

The RFD determined the number of wells to be drilled. If additional wells are needed, this could be done with either an environmental assessment (EA) or another EIS for the particular area.

Comment Number: 100,240

Comment:

The permitting process requires site-specific monitoring, and attempting to accomplish this task prior to leasing will increase the time for issuing new leases and adding more delay to the already long overdue leasing.

Staged leasing is not preferable to developing companies, because it does not allow them to develop a block of land for exploration and justifying the economic risks taken by the exploring company.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Although monitoring of resource indicators is a component of the new strategy, it would not delay leasing decisions in areas available for leasing. Please refer to revised version of Appendix 17 in the final EIS for details.

Comment Number: 100,295

Comment:

In Volume I, Page 2-145 in the Preferred Alternative, please omit, COAs "would allow necessary impacts in order for development to be technically feasible or economically viable." Such a caveat destroys any hope of reasonable regulation. It's not our problem to make drilling or mining "economically feasible." It's the company's problem to restore our resources to as good or better condition than they found them. And if that's not economically nor technically feasible, they should look for other forms of energy.

Response:

All surface disturbing activities must comply with state and federal rules and regulations to protect the resources.

Comment Number: 100,332

Comment:

Yates strongly objects to the phased leasing and development portions of the Preferred Alternative. The Bureau of Land Management (BLM) has been analyzing this area of the Green River Basin for over 10

years since the beginning of the Green River Resource Area RMP revision (1997) process. All but the 80,000 acres of the "Core Area" were analyzed, allowing for oil and gas leasing and drilling in that RMP revision. Now, the area has been reanalyzed and studied in the original draft EIS CAP and in the current supplemental draft EIS CAP. The decision to proceed with leasing and drilling and/or development is further postponed until the IDP BLM team monitors ("about 2 years") and conducts further analyses on which to base their decisions.

There seems to be a great reluctance to make a decision simply because the special interest groups are waging a public campaign to prohibit oil and gas activity in an area that has had oil and gas activity for 50 years and is now approximately 50 percent leased. There are currently 153 total wells that have been drilled in the JMH CAP planning area and the special interest groups still want to preserve this "pristine" area. The wildlife is flourishing, and no degradation of any resource has occurred due to the current mitigations that BLM places on drilling in this area.

Staged leasing makes it impossible for an oil and gas company to plan or budget for a drilling project. If it is not known when a leasing or drilling opportunity will become available, how can funds be allocated for any specific exploratory effort?

Since the areas of crucial winter range, calving/fawning areas as well as WSAs area already known, CSUs, and NSOs as well as other COAs can be applied to the lease to be auctioned and sold. How can leasing be monitored to determine if it would cause an "irreversible adverse effect?"

Page 2-81 Mineral and Alternative Resource Management (supplemental draft EIS) clearly states that all management actions would recognize valid existing rights, which would not include establishing a lease block at the whim of the IDT team.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Although monitoring of resource indicators is a component of the new strategy, it would not delay leasing decisions in areas available for leasing. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

In face, 43 CFR Part 3100 Section 3101.4-4 states that a suspension of operations or of production may be directed only in cases where the lessee is prevented from operating on the lease or producing from the lease, despite the exercise of due diligence, by reason of force majeure, that is, matters beyond the control of the lessee.

Response:

The leases in the Jack Morrow Hills CAP area are suspended under 43 CFR 3103.4-4, which states, "A suspension of all operations and production may be directed or consented to by the authorized officer only in the interest of conservation of natural resources," which included planning purposes.

Comment:

Leasable Fluid Minerals Management: Of course, the entire area would not be leased because of the WSAs, etc.; however, how can the BLM arbitrarily decide where the exploration would occur and then where the development would occur?

Response:

Input from industry (companies with leases in the JMH CAP planning area) as to where exploration and development would occur was requested and only two companies provided information. Therefore, BLM made decisions so that the cooperating operators could develop their leases based on environmental conditions and potential impacts to other resources and resource uses.

Comment:

Page 2-8 (supplemental draft EIS): If population trends would happen to go down, say based on drought or an increase in predators, would oil and gas activity be banned until those conditions changed?

Response:

If it was found that any activity, including mineral development, would further impact populations beyond acceptable levels, restrictions could be placed on that activity. Prohibiting fluid mineral exploration and leasing would require a plan amendment. See Appendix 17 for details.

Comment:

How would BLM account for drainage demands by the RMG when they allow production through abandonment and reclamation before allowing offset development to occur? Drilling, development, and production as well as reclamation could take from 20 to 50 years.

Response:

The only drainage claims that can be made in the JMH area will be by adjacent private or State leases in Area 3. The first course of action would be to pursue a compensatory royalty agreement and a last option is a possible NSO lease. Valid existing lease rights are recognized throughout the planning area.

Comment:

Page 2-83, Lease Stipulations (supplemental draft EIS): No surface occupancy (NSO) restriction will not work for exploratory wells when the potential is as yet unknown and, thus, the economics are unknown. BLM seems to have the impression that directional drilling can be accomplished under any scenario where another resource must be protected. Directional drilling is always risky in that it always costs more, and the chance of mechanical failure is increased and could render the gas resource uneconomic. Pad or directional drilling works, in general, for very short distances (less than 600 feet) and where there is a specific pay zone.

Response:

It is recognized that costs are greater and directional drilling is risky. However, such measures are taken to protect other resources and avoid conflicts with other resources and resource uses.

It has been shown in other areas (e.g., Jonah field) that directional drilling can be successful over greater distances and can therefore be a viable method in many cases. The distance achieved in Jonah has exceeded 1,200 feet. However, the exact distance in the JMH will not be known until drilling actually occurs.

Comment:

Page 2-83, Drilling Permits (supplemental draft EIS): It should be noted that a NEPA analysis is required for every Drilling Permit. In a development case, an EIS would be required to develop site-specific mitigations to the unique resources in the area affected by the well. Trying to monitor prior to drilling only allows for the analysis of natural or other man-made phenomenon that are unrelated to the drilling and production impacts.

Response:

It is standard operating procedure for BLM to monitor and analyze before and during mineral development.

Comment:

Oil and Gas lessees cannot be held responsible for droughts and changes in predator populations.

Response:

These items will be taken into consideration when the decisions are made to open more areas for development.

Comment:

Page 2-142, Oil and Gas Leases Preferred Alternative (supplemental draft EIS): Would it take 2 years before the IDT team determines if any leases will come out of suspension?

Response:

Under the new strategy for implementing leasing decisions (Appendix 17), suspensions will be lifted 3 years from the signing of the ROD; new leasing will be considered immediately following the signing of the ROD in Areas 1 and 2. Please refer to Appendix 17 for details regarding the strategy for implementing fluid mineral leasing decisions.

Comment:

Page 2-145 Lease Stipulations Preferred Alternative (supplemental draft EIS): Yates takes this to mean that the IDT team would prohibit oil and gas activity and or leasing if weather, drought, disease, hunting pressure, introduction of non-native species and recreation were to be given preference by the IDT team.

Response:

These factors would be considered in the determination of lease stipulations, but would NOT be given preference.

Comment:

Page 2-150 Mineral Material Sales Preferred Alternative (supplemental draft EIS): Where does the ½ mile from a lek avoidance keep coming from?

Response:

On page 2-116 of the supplemental draft EIS, it states that surface disturbing activities would avoid areas within ¼ to ½ mile of greater sage-grouse leks. Therefore, the ½ mile for mineral material sales is within the stated range.

Comment:

Table 2-2: This table is almost unreadable, and there appears to be no total in several categories.

Response:

This table has been modified in the final EIS to improve the readability.

Comment:

The discussion concerning exploratory and development spacing in the planning area appears to be in error. All wells for gas, including CBM wells, will be drilled on 160 density or 4 wells per section. This applies to wildcat wells also. If wider or lesser spacing is desired, the oil and gas operator will have to receive permission by application from the Wyoming Oil and Gas Conservation Commission (WOGCC).

Response:

A more complete discussion of spacing has been included in the final EIS.

Comment:

In addition, the section only speaks of production from Nitchie Gulch field and existing gas production in the area as 145.4 billion cubic feet of gas. Yates is surprised that the Wyoming Geological Survey Open file Report 2002-1, dated March 2002, was not listed in the references in Volume 2 (other than the RFD). The 3.9 trillion cubic feet of currently technically recoverable gas estimate in the Geological Survey publication is also not mentioned. The assumption that only 24.3 BCF remaining in producing wells is impacted is entirely without basis. The Geological Survey also estimates $1.88 billion in revenues for the State of Wyoming from this production. The impact of this Wyoming Geological Survey Open File must be evaluated in the final EIS.

Volume 2: Page F-12 and F-13, Figures 17 and 18 both need to be adjusted by the Wyoming Geological Survey Open File Report 2002-1 3.8 TCF gas and the $1.88 billion dollars of income to the State.

Response:

Production from existing wells was used only to assume the amount of gas that could be recovered from an average well. That average well recovery figure was also assumed to be the average amount of gas that would be recovered from any future new producing wells. It was used, along with estimates of the numbers of new producing wells for each alternative (Table 4-14 in Section 4.12, Socioeconomics), to estimate future mineral royalties and taxes for each alternative (Table 4-15 in Section 4.12, Socioeconomics).

The WSGS estimates of recoverable gas and revenues were not specifically referred to here because they are estimates of the total resource and its total potential value. They did not estimate the amount of gas and revenues that could be obtained in the 20-year period analyzed for this EIS. Our estimates project only those wells that could be drilled, the recoverable gas resource, and the resulting revenue for each alternative during that 20-year period. Impacts are presented in Sections 4.8 and 4.12 under consideration of a 20-year period.

Comment:

Page A13-13, Wyoming Geological Survey Report. My copy of the Open File Report 2002-1 says 3935 BCF gas and 535 MBO potential under current technology. The gas numbers differ in the referenced paragraph.

Response:

After publication, it was determined that the "Present Technology Risked/Recoverable Resource" and the "Potential # Wells" numbers for coalbed natural gas were not correct in Table 1 of Open File Report 2002-1. After discussion with Rodney H. De Bruin of the Wyoming Geologic Survey, BLM modified those two numbers. A reference to this modification will be included in the final EIS.

Comment:

Page A17-3, I have a copy of the 43 CFR 3103.4-4 and it does not mention using suspensions as part of an adaptive management strategy. Will operators wait until the IDT meets once a year to review indicators or see if they can proceed with exploration?

Page A17-7, what does it mean that consideration will be give to those occurrences outside of BLM's control such as drought, politics, etc. If there is a ten-year drought, will oil and gas drilling be allowed?

Response:

43 CFR Part 3103.4-4 states, "A suspension of all operations and production may be directed or consented to by the authorized officer only in the interest of conservation of natural resources." This includes planning purposes and initiating environmental studies.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Numbers: 100,332; 100,440; 100,433; 100459

Comment:

The Bureau should disclose in the final draft EIS that a decision adopting the Preferred Alternative is contrary to the President's Executive Order No. 13212 and would require the preparation of a Statement of Adverse Energy Impact as required by Instruction Memorandum No. 2002-53.

Response:

The President's Energy Policy is considered in conjunction with all the other responsibilities of the BLM. The policy does not state to override the policies and laws under which the BLM operates.

Comment Number: 100,344

Comment:

The idea of staged leasing places unfair and unwarranted restrictions on valid existing lease rights. This area is prospective for natural gas, which is now selling for near record prices. Further delays in exploration and development of valid leases deprive the lessee of the fair present value of his minerals.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,345

Comment:

We note with interest under the BLM's Preferred Alternative that "timing and sequencing of events" will be used to reach a balance of uses (page iv). It is not clear, however, that the approach described in Section 2.7.5.1 on leasable fluid minerals management will be feasible. It is stated on page 2-81 that "the entire planning area would not be leased at the same time, and exploration and development activities would not be allowed to occur at the same time over the entire planning area." Obviously, the devil is in the details, but we have seen little evidence that the Bureau can control leasing in such a manner. We do agree that a strategy like this would be preferable to all areas open at once and urge the Bureau to implement this approach no matter which alternative is chosen. The final EIS should discuss feasibility of this approach and present details on how this strategy would be carried out.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,350

Comment:

I would like to recommend that you look at Map 10 in Vol. 2 and do the following:

- Retain a closure to all new leasing in the Core Area and in the WSAs.
- Look at the wildlife movement corridor between the birthing areas in the Oregon Buttes area and the southern big game crucial areas, WSAs and Core Area. There is a movement corridor area between these seasonal ranges that should be closed to new leasing, and any leases that expire without development should be removed from leasing lists.

Leasing should cease and current leases not developed should be allowed to expire without renewal on crucial sage-grouse habitats.

Response:

The Proposed JMH CAP in the final EIS provides a movement corridor for wildlife. As described in Appendix 17, Area 3 is closed to new leasing. Please refer to Appendix 17 for details.

The alternatives were carefully developed and selected based on established criteria to minimize the impacts on the environment and the wildlife.

Comment Number: 100,373

Comment:

The drilling of infill wells constitutes a unique low risk, and low impact oil and gas resource opportunity. These infill locations are low risk because they will be drilled in between or adjacent to previously drilled wells. These wells will be relatively low impact because they will be drilled in an established producing field area. This extraordinary type of oil and gas resource does not occur anywhere else in this JMH EIS area and warrants minimal additional mitigation.

Response:

Infill drilling is being considered in the Proposed JMH CAP. Requirements vary with the location and resources involved.

Comment:

Berco would like to reiterate that the oil and gas reserves that have been encountered in the Nitchie Gulch Field area on a per-well basis are not sufficient to warrant the additional expense of directional drilling. Directional drilling also presents unnecessary additional mechanical risk when fracture stimulating the objective horizons. Nitchie Gulch field reserves are not comparable to other more prolific southwest Wyoming producing areas such as the Jonah Field or the Pinedale Anticline. Requiring directional drilling on our existing leases will have the same effect as disapproving the APD altogether inasmuch as the operation will be rendered uneconomic. This mitigation is unacceptable in the Nitchie Gulch Field area.

Response:

The proposed technical application of drilling and completion in the area is not dictated by the BLM. Directional drilling is only one method of mitigation that can be used in the process.

Comment:

If additional mitigation is required by the Adaptive Management Strategy contained in the Preferred Alternative, specific justification for each restriction should be supported by irrefutable scientific data as a basis for the application to the action. Berco considers arbitrary government restrictions imposed upon the use of its existing oil and gas leases (e.g., the number of well pads per section, requirement to directionally drill, requirements to install remote control facilities, and wildlife stipulations during the winter months in the sand dunes) as a deprivation of its core property right to develop its property. Unnecessary restrictions or conditions run contrary to the spirit and terms of our valid and existing oil and gas leases. If these restrictions are unreasonably imposed, they will cause significant development drilling not to occur and prevent Berco from realizing all of the economic beneficial use of its oil and gas leasehold, which may constitute a regulatory taking.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. However, monitoring of resources indicators remains a component of the new strategy and could result in changes to required mitigation. Many mitigation methods can be employed. The BLM does not limit operators on the type of method used. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,376

Comment:

"Unnecessary or undue degradation" should not be defined by default. For example, BLM should reject the suggestion that because an oil and gas lease conveys the right to "use so much of the leased lands as is necessary to explore for, drill for . . . and dispose of all of the leased resource . . ." essentially anything an oil and gas lessee proposes to do to develop a lease is permissible. What is either unnecessary or undue must be defined on the basis of today's technology, not the industry standard of twenty or ten or even five years ago.

Response:

All surface disturbing activities must meet all the rules and regulations set forth by the BLM to protect the resources.

Comment:

We are concerned that the range of alternatives for energy development presented in the supplemental draft EIS is very narrow. When nondiscretionary closures such as wilderness study areas are subtracted, the total number of acres closed to mineral leasing varies by only 26,000 acres between Alternative 1 and the Preferred Alternative.

Response:

A range of alternatives was analyzed, from a development-oriented alternative to a preservation alternative. The range of alternatives was made available for public comment before the full analysis; no comments indicated that the range of alternatives was narrow.

Comment:

Energy development on the Jack Morrow Hills itself cannot be conducted without severe losses of essential wildlife habitat as well as other cultural and natural resources. For these reasons, the JMHCAP must include a prohibition on new mineral leasing, and BLM must begin a concerted effort to buy out or exchange existing leases.

Response:

All sensitive areas have been analyzed, and restrictions have been put in place to protect those resources.

Comment:

Many of the recommendations in this section are in conformance with the report "Land Use Planning and Oil and Gas Leasing on Onshore Federal Lands." National Academy of Sciences, 1989. We request that BLM consider and respond to this report as the agency develops the JMH CAP.

Response:

Policy recommendations are addressed at the national level.

Comment

In those instances where BLM cannot re-acquire leased mineral rights, BLM should invoke the use of lease suspensions to ensure that oil and gas development does not outpace the agency's ability to ensure reclamation of wildlife habitats impacted by such development. All new development of an operator's existing leases should be conditioned upon completion of effective reclamation. Operations on individual leases should be strictly controlled to avoid impacts to crucial big game habitats; sage-grouse breeding, nesting, and wintering areas; mountain plover nesting areas; cultural resources; Native American sites and landscapes of religious or cultural significance, as well as other resources.

Without these efforts, BLM cannot meet its obligations under FLPMA to ensure that the public lands are managed to achieve sustained yield, to prevent undue or unnecessary degradation, and in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values . . ." as well as to "preserve and protect certain public lands in their natural condition" and provide "food and habitat for fish and wildlife" 43 U.S.C. §1701(a)(8) (emphasis added).

Response:

Potential impacts resulting from mineral development were analyzed for all alternatives in Chapter 4 of the supplemental draft EIS. The Proposed JMH CAP considers all impacts and resource values including energy development.

Comment:

The supplemental draft EIS projects that the maximum number of conventional oil and gas wells drilled in the Jack Morrow Hills will be 264. BLM arrives at this number by assuming a "maximum average exploration well density" of one well for every four sections in the planning area (supplemental draft EIS at A13-23). There is, however, no explanation provided for how the agency arrived at this "average" other than a laundry list of possible considerations (supplemental draft EIS at A13-23). BLM derived this average based upon "number of potential accumulation types, geologic complexity of the area, and the prevalence of oil and gas occurrences in the planning area." This maximum average exploration well density results in 156 exploration wells.

An average well density of one well per four sections is at odds with other statements in the supplemental draft EIS. For example, BLM states elsewhere in the supplemental draft EIS that well spacing will be one well per section, or 640 acres. However, well spacing in the Nitchie Gulch project is one well per 160 acres (supplemental draft EIS at 4-121).

Response:

Predicting the number of potential future exploratory wells is a difficult task. BLM considered all available information about past hydrocarbon development, relevant research on potential for the resource, and industry-supplied information to understand the potential for future activity. The Wyoming State Geological Survey (WSGS) found potential for eight different types of plays (not counting the coalbed natural gas potential play) in the area. BLM determined that an average density of one well for every four sections would allow industry to obtain enough information to make geologic interpretations needed for outlining potential development targets in the eight plays identified. These assumptions assume that prices for hydrocarbons will be high enough to encourage a high level of interest in exploring this area.

The assumption of an average well density of one well per four sections was used to determine how many wells would be needed to outline potential targets for development over the 20-year study period. The discussion at 4-121 was intended to indicate how closely spaced wells (exploratory and development) could be. The subject discussion at 4-121 was determined to be somewhat confusing; therefore, a more complete discussion of spacing will be included in the final EIS.

Comment:

Based upon past success rates for exploration in the Green River Basin, BLM suggests that only 23 of those 156 exploration wells will result in discoveries (supplemental draft EIS at A13-23). BLM's projected success rate for these exploration activities is approximately 15 percent. Yet, previous oil and gas drilling in the Jack Morrow Hills has had a significantly higher rate of completion: 42 percent (supplemental draft EIS at A13- 10). Moreover, the supplemental draft EIS states that "field development drilling success rates in the Green River Basin have been enhanced" through the use of better exploration technology (supplemental draft EIS at A13-16). The RFD fails to account for these advances in technology.

BLM then multiplies those 23 discovery wells by three to arrive at the number of development wells: 70. BLM then arbitrarily projects an additional 38 development wells in existing producing areas

(supplemental draft EIS at A13-23). One hundred fifty-six exploration wells plus 108 development wells equals 264 wells.

Response:

Only exploration wells have had a 15-percent success rate. The 42-percent success rate is for all wells (exploratory and development). Development wells improve the overall success rate of 42 percent because more geologic information is available to help pinpoint new well locations. The average exploratory well success rate is considered to be about 10 percent, so an increase to 15 percent does indicate better exploration technology. The additional 38 development wells have been proposed by Berco Resources, LLC, in the Nitchie Gulch unit/field area. The discussion will be modified in the final EIS to reflect that proposal.

Comment:

At the conclusion of this analysis, the supplemental draft EIS states that "additional text will be added here providing additional rationale for the exploration and development rate for this alternative" (supplemental draft EIS at A13-24). This "additional information" should have been included in the supplemental draft EIS and made available for public review and comment.

Response:

The additional rationale to which the comment was referring was added to this section, but the notation was not removed. This sentence will be deleted from the final EIS.

Comment:

Using other predictive schemes, however, BLM arrived at significantly higher numbers of wells. For example, the "Resource Method Estimate" approach calculates that recovery of the natural gas resource (not including coalbed methane) would require 891 producing wells on the Jack Morrow Hills (supplemental draft EIS at A13-13). The "Checkerboard Method" estimates that 897 to 1,077 wells would be needed to develop the available resources in the planning area (supplemental draft EIS at A13-13). The Wyoming State Geological Survey (WSGS) report projects that reserves development would "require drilling of 322 conventional oil and gas wells . . .." (supplemental draft EIS at A13-14). BLM itself admits that its estimate "would result in discovery and placement into production" of only 15 percent of the available conventional oil and gas resource in the planning area (supplemental draft EIS at A13-23 to A13-24). Numerous commentors on the RFD in the original draft EIS, including industry, disagreed with BLM's numbers, noting that they were too low (supplemental draft EIS at A13-15 to A13-16).

There is no explanation in the RFD for why this small fraction of available reserves is all that will be developed. Increasing demand for oil and natural gas, as well as soaring prices for both, are good indicators that industry will have substantial incentive to produce as much of these energy fuels as possible.

Given the disparity between BLM's estimate and the numbers generated by other methodologies, it is readily apparent the agency needs to re-evaluate the environmental impacts associated with conventional oil and gas development on the Jack Morrow Hills.

Response:

The three methods described (i.e., Resource Method Estimate, Checkerboard Method, and WSGS report) show the variation in estimates of the number of wells that may be required to completely develop the potential resource. The most recent estimate projected that only 322 wells would be needed to completely develop the resource. Our analysis only projects the number of wells that could be drilled over the 20-year

period being studied, not the number that might ultimately be needed to completely develop the resource. Projections of future wells for this draft EIS were increased over those in the original draft EIS, in response to additional data that has been received.

The Bureau is charged with preparing a reasonable projection of the level of future activity. Industry has drilled 156 wells in the Jack Morrow Hills in the past 75 years. This analysis projects an additional 264 wells (coalbed gas wells excluded); a 176-percent increase in wells in only 20 years. BLM believes this is a reasonable projection that allows for increasing demand and gas prices.

Comment:

While the RFD for conventional oil and gas development on the Jack Morrow Hills is flawed, the RFD for coalbed methane is practically nonexistent. BLM simply assumes that that there will be no CBM development in the Jack Morrow Hills during the twenty-year life of the plan and no exploration beyond two Plans of Development (PODs totaling 50 wells (supplemental draft EIS at A13-27). In addition, the supplemental draft EIS provides no prediction as to the locations of these PODs.

Given the extent of the coalbed methane resource in the planning area, this assumption seems drastically misplaced. The Wyoming State Geological Survey estimates that "reserves development would require drilling of . . . 543 coalbed methane wells in the planning area" (supplemental draft EIS at A13-14). In commenting on the previous draft EIS, the United States Environmental Protection Agency (USEPA) objected that "the impacts should evaluate a much more intense development scenario for coalbed methane development" (SDEIS at A13-16). USEPA noted that, in the core area alone, "the number of coalbed methane wells could be in the range of 800 wells." BLM ignored these comments and produced a supplement to the original draft EIS that again fails to address the true impacts of coalbed methane development on the Jack Morrow Hills. BLM admits that it made no effort to incorporate this information into its RFD for coalbed methane (supplemental draft EIS at A13-28).

Response:

Information shows that the area has potential for a coalbed gas resource, although past efforts have been unsuccessful at finding economic amounts of gas. In addition, industry has not proposed anything more than an interest in continuing to explore for this resource. As stated in the draft EIS "any action subsequent to an initial phase of exploration is so speculative as to preclude reasonable analysis at this time." That analysis does allow for a significant amount of exploratory drilling (i.e., 50 wells). Map A13-4 shows areas of future potential for continued exploratory and development activity. Any prediction of actual POD locations would be so speculative as to not be reasonable.

As indicated in our discussion of the WSGS Report, some of their assumptions could be optimistic so that predicted reserves and wells needed to produce those reserves would be lower than their estimate. As indicated in our discussion of the EPA recommendation, they provided no supporting information for that recommendation.

Comment:

The JMHCAP must ensure that the unique impacts of CBM development are examined prior to leasing and other CBM activities. Such analyses cannot simply parrot evaluations completed for conventional oil and gas development. Yet, the supplemental draft EIS contains little or no information on the unique impacts of CBM development. For example, the supplemental draft EIS states only that "hydrological investigations would be conducted prior to coalbed methane development to determine whether any connection exists between surface waters and the aquifer that would be dewatered" (supplemental draft EIS at 4-13). The supplemental draft EIS gives no indication of just when those "investigations" would be completed.

Response:

Impacts resulting from CBM development on water resources are discussed in Section 4.4.2 of the supplemental draft EIS. The relationship between CBM aquifers and surface resources will be explored in detail when site-specific projects are proposed and associated environmental impact statements are developed.

Comment:

The Biological Opinion issued by the United States Fish and Wildlife Service states that "The depletion analysis for coalbed methane development only considers withdrawals for well drilling and completion. Dewatering for coalbed methane production will be evaluated during the site-specific analysis required for the Application for Permit to Drill process" (supplemental draft EIS at A3-13 to A3-14). It is foolish on the agency's part to believe it can defer this analysis, unlike the others, until the APD stage. The leases themselves convey the right to "use so much of the leased lands as is necessary to explore for, drill for . . . and dispose of all of the leased resource . . .." See Conner v. Burford, 848 F.2d 1441 (9th Cir. 1988). Dewatering the coal seam is a necessary corollary to production of CBM. If the agency determines at the APD stage that dewatering the coal seams in the Jack Morrow Hills will pose a threat to endangered fish in the Colorado River, its options for securing protection of those fishes will be limited.

Given the paucity of information contained in this supplemental draft EIS on coalbed methane impacts, no new leases should be issued, and no coalbed methane exploration or production should be authorized on existing leases until a separate EIS on CBM is completed.

Response:

Natural gas production from conventional and unconventional formations will follow all state and federal requirements. The Colorado River Salinity Compact does not allow for surface discharge of produced water. Produced water will be injected into the subsurface in accordance with state and federal requirements.

Comment:

CBM development has severe impacts on water quality. The JMH CAP should prohibit discharge of water extracted from coalbeds onto the ground or into surface waters. This is particularly true of saline or sodic "produced" water. Salinity is already a problem for streams in the Jack Morrow Hills (supplemental draft EIS at 3-5). Produced water is often contaminated with heavy metals. Selenium is of particular concern because of its impacts on aquatic and avian species. The supplemental draft EIS, however, contains little information on current water quality and no information on the impact of CBM-produced water on surface waters in the planning area. The supplemental draft EIS states only that "expected water production rates associated with coalbed methane cannot be predicted for the planning area" (supplemental draft EIS at 4-122). There is no information on what the quality of the produced water might be. If produced waters are or become a "discernible, confined, and discrete conveyance . . . from which pollutants are or may be discharged," they must be treated as point source discharges of pollutants and a National Pollution Discharge Elimination System (NPDES) permit must be required. 33 U.S.C. §§ 1362(14), 1342.

If water from CBM production is discharged, directly or indirectly, into streams, the impacts of augmented flows and increased concentrations of salts (ions) and dissolved solids on the ecological characteristics of the streams (perennial or intermittent) should be analyzed. Such analyses must account for the full range of variations in stream flow, effluent (produced water) concentrations, and sensitivities of different species at different life-stages. Impacts from altering stream thermal conditions and the timing of flows must be analyzed. Effects of discharged produced water on adjacent riparian areas and the effects

of increased turbidity and sedimentation should be considered. The analysis should consider lethal and sublethal effects on biota. None of these impacts are addressed in the supplemental draft EIS. The JMH CAP should adopt measures adequate to prevent or mitigate these impacts.

Response:

The Colorado River Salinity Compact does not allow for surface discharge of produced water. In addition, subsurface disposal will follow state and federal requirements.

Comment:

When produced water is stored in reservoirs or pits, heavy metals can become concentrated. The JMH CAP and supplemental draft EIS must address the problem of produced water storage pits/reservoirs leading to concentrated chemical solutions that harm wildlife. Compliance with the Migratory Bird Treaty Act, for example, may require that such storage facilities be covered.

Response:

Natural gas production from conventional and unconventional formations will follow all state and federal requirements.

Comment:

Appendix 6-Standards Practices, Best Management Practices, and Guidelines for Surface Disturbing Activities states that reserve "pits" may be fenced or netted (supplemental draft EIS at A6-10). The supplemental draft EIS does not address the issue of large containment reservoirs often associated with coalbed methane production. Netting of these facilities may be neither feasible nor effective.

Response:

Pits are generally used as temporary storage facilities. Produced water will be stored in tanks and will be injected into the subsurface.

Comment:

In addition to the impacts associated with the discharge of produced water, BLM must address the environmental effects of dewatering the coal seam. CBM development can lower water tables and have serious impacts on the accessibility of water for domestic and agricultural uses. It can increase the likelihood of difficult-to-control coal seam fires. See page of methane and its effects on vegetation, water (including domestic water and aquifers), and public safety must be considered. BLM must ensure these impacts are adequately evaluated pursuant to NEPA before leases are issued, while adverse impacts can still be mitigated or prohibited. The supplemental draft EIS fails to do so, stating only that "the cumulative impact on ground water aquifers from coalbed methane development cannot be determined because of lack of information" (supplemental draft EIS at 4-15).

BLM fails to look at the information that is available. For example, there are four coalbed methane wells currently operating in the Jack Morrow Hills. There are coalbed methane projects directly south and east of the planning area. Surely data from these operations could be gleaned that would shed some light on the potential impacts of coalbed methane production in the Jack Morrow Hills.

Response:

The coal seams in this area are typically much deeper than aquifers accessed for domestic water supplies. Oxygen is an important element for coal seam fires. It would be extremely difficult for oxygen to get to

the coal seam to cause a fire. The coal seams in the area are isolated and do not outcrop. Because of the depth of the coal seams and their isolation, seepage of methane has not occurred and is not probable.

In addition to stating that cumulative impacts cannot be determined because of lack of information, the supplemental draft EIS states on Page 4-15, "Prior to development, investigation of aquifers and their possible connections to surface waters would provide the information necessary for determining cumulative impacts and any necessary mitigation."

No coalbed natural gas projects are currently operating in the Jack Morrow Hills area. BLM will evaluate the impacts on the resources, as part of the monitoring strategy (Appendix 17). The geological conditions dictate future activities throughout the planning area.

Comment:

For lands already under lease, the JMH CAP should require staged development with monitoring adequate to ensure that predicted impacts to environmental resources have not been exceeded and that mitigation measures are sufficient. In addition, the JMH CAP should impose reasonable measures to minimize adverse impacts to other resources. For example, seasonal restrictions should be imposed for the protection of important wildlife habitats, including crucial winter range and calving areas.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. However, monitoring of resources indicators remains a component of the new strategy, and could result in changes to required mitigation. All required restrictions and stipulations will be adhered to throughout the planning area. Please refer to the update version of Appendix 17 in the final EIS for details.

Comment:

In response to protests filed by NWF challenging proposed CBM development on the Atlantic Rim, BLM maintained that the agency has authority to impose seasonal restrictions to protect winter range at the exploration and production phase. According to BLM, this is true even though the underlying leases contain no timing stipulations. We urge BLM to use this authority to ensure that adequate measures are in place to preserve significant resources on lands already under lease in the Jack Morrow Hills area. However, the agency must be sanguine about its ability to impose new conditions on lands already under lease. Such conditions must be "consistent with lease terms" (43 C.F.R. § 3101.1-2).

Response:

BLM must abide by the stipulations attached to the lease; restrictions deriving from specific, nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed.

Comment:

Clustered development of these leases should be required to minimize new roads and pipelines, as well as the number of drill pads. Directional drilling should be used. All new drill pads should be constructed from existing improved gravel roads where possible. If there is no such road within reach of directional drilling from the site, previously constructed but unmaintained routes may be upgraded temporarily to access the site. In the absence of any improved or unimproved route within a reasonable distance of the proposed site, limited road construction may be approved. However, new road construction will be

restricted to the minimum distance necessary to access the site. All newly constructed or upgraded routes will be closed and rehabilitated immediately following termination of oil and gas activity. Pitless drilling methods using closed-loop circulation of drilling muds should be employed for all new wells unless a less environmentally harmful drilling technique is available.

Response:

Requirements for all surface-disturbing activities for all the alternatives are provided in Table 2-2 of the supplemental draft EIS. BLM and the operator will determine mitigation on a case-by-case basis.

Comment:

The JMH CAP must address the issue of granting exemptions and exceptions to lease stipulations at the APD stage. In our view, such stipulations should be waived only in the most extraordinary circumstances. The mere convenience of the lessee or operator should never be adequate justification. For example, one common rationale for permitting exemptions or exceptions to timing stipulations intended to protect crucial winter range or calving areas is that the animals are not yet present (see supplemental draft EIS at A4-2). However, drilling during a restricted period may prevent animals that would have moved onto the site from doing so. It may disturb and stress animals that are in areas adjacent to or nearby the area being drilled. It concentrates animals in areas that are not being drilled, resulting in overuse of otherwise undisturbed areas. All of these factors weigh against the easy waiver of lease stipulations.

Response:

BLM considers exceptions on a case-by-case basis using approved criteria that must be met before granting the exception.

Comment:

Hydraulic fracturing and drilling fluids contain a wide array of chemicals, many of which are toxic. Spills of these chemicals should be avoided. The final land use plan must ensure compliance with the Clean Water Act, Safe Drinking Water Act, Toxic Substances Control Act, Resource Conservation and Recovery Act, and the Comprehensive Environmental Response Compensation Liability Act relative to the use of these and other hazardous substances. The JMH CAP should provide specific guidance regarding the standards oil and gas operators must abide by to meet the requirements of these laws and provide for monitoring and enforcement by BLM.

Response:

Operators must meet all state and federal requirements during all phases of exploration and production activities.

Comment:

All plans of operations should include a reclamation plan that describes in detail the methods that will be used to ensure complete and timely restoration of all lands impacted by oil and gas activities to their prior natural condition. Reclamation should be conducted concurrently with other operations.

In addition, BLM must ensure that bonds are adequate to cover actual reclamation costs so neither taxpayers nor landowners are left to foot the bill. The JMH CAP should identify those lands within the planning area or specific resource values, such as sagebrush, that may require additional bonding. See, e.g., 30 U.S.C. § 226(f); 43 C.F.R. §§ 3104.1(a), 3104.5, 3106.6-2.

Response:

It is standard operating procedure to include a reclamation plan and for BLM to require an adequate bond for the reclamation expenses. Before project approval, site-specific conditions and the presence of resources are considered in the determination for the amount of the bond.

Comment:

BLM interprets the General Mining Law of 1872 to provide few opportunities for the agency to exercise its management discretion. Because of this, sensitive lands must be withdrawn from the operation of the Law. These lands include all ACECs, all crucial big game habitats, sage-grouse breeding, nesting and wintering areas, mountain plover nesting areas, lands proposed for wilderness designation, and all other lands requiring NSO stipulations for leased minerals. In the Jack Morrow Hills, withdrawal of the entire planning area is appropriate.

Response:

The FLPMA provides the BLM the authority to withdraw land if the need exists. All public lands are open to entry and location under the 1872 Mining Law until they are closed by some legal means. ACECs and other sensitive lands are provided specific protection measures for surface disturbing activities to ensure the integrity of these areas is preserved. Therefore, complete withdrawal is not necessary and would be unreasonable.

Comment:

Moreover, as the draft EIS noted, the planning area has only limited potential for this kind of mineral development and very little current mining activity (draft EIS at 217-218). In this case, "it seems an entirely reasonable option to withdraw all or most of the planning area from mineral development" (Memorandum to the Secretary of the Interior from the Solicitor, December 22, 2000).

Response:

Most of the area is closed to mining activity and has been analyzed as such. Complete withdrawal was considered and analyzed in Alternative 2 (supplemental draft EIS, Page 2-148).

Comment:

BLM's Preferred Alternative for management of these lands provides little real protection for the wildlife and wildlands of the Jack Morrow Hills. Instead, the agency proposes to conduct a landscape-level experiment on how much development wildlife can tolerate in these crucial habitats. Under the Preferred Alternative, oil and gas development will go forward on much of the Jack Morrow Hills. BLM will monitor its impact on other resources, including wildlife, and "adjust" the agency's management of such development as needed.

This so-called "adaptive management" strategy is based upon a number of assumptions; none of which are true. First, this strategy assumes that BLM will have sufficient resources to monitor adequately the impacts of oil and gas development. Past experience with BLM's monitoring programs demonstrates that the costs of monitoring often outstrip the agency's available resources. Second, the strategy assumes that BLM will be able to identify that moment, just before the threshold is crossed and damage to other resources becomes irreparable. Yet, the supplemental draft EIS admits that BLM's preference for the adaptive management alternative is based, in part, on the fact that the agency lacks sufficient information to understand the true impacts of oil and gas development in the Jack Morrow Hills. Finally, this strategy assumes that BLM will be able to put the genie of oil and gas development back in the bottle if the agency determines that unacceptable levels of harm are occurring. Once leases are issued, wells are drilled, and

exploration seeks to become production, however, it is extremely unlikely that BLM will pull the plug. In our experience, limits on oil and gas development become less restrictive, rather than more so, from lease issuance to full field production.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field indicator data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Funding is always questionable with any project. This goes for the BLM and the operator. The BLM is identifying cost-effective tools to use in this project. The collection of much of the indicator data needed to implement the new strategy is part of the day-to-day duties of different governmental agencies or groups. Use of this readily available information has little impact on the need for additional funding or manpower.

Comment:

We note that it is only "impossible to predict how future development will proceed" (supplemental draft EIS at A17-1) if the agency fails to exert the authority it has to control the pace and direction of private activities on the lands it manages. Nothing in the Mineral Leasing Act requires BLM to issue oil and gas leases. The leases it issues can contain stipulations on the time, place, and manner of both exploration and development. BLM has the power to suspend existing leases or to re-acquire the mineral rights under lease. It has the authority to condition its approval of drill permits. BLM can withdraw lands from the operation of the General Mining Law, designate lands as unsuitable for coal production, and reduce livestock AUMs. The public lands are subject to the whims of industry and the market only because BLM has chosen to make them so.

Response:

It is impossible to predict how future development will proceed because the reserves are generally unknown in the area. The true way of determining the locations of reserves is to drill exploratory wells. BLM manages the public lands for multiple use and sustained yield. Oil and gas operations are permitted on these lands with appropriate stipulations and mitigation measures to protect resource values and other uses.

Comment:

The adaptive management strategy proposed in the supplemental draft EIS is incomplete. It identifies so-called "resource indicators" but provides no indication of when adverse data on these indicators may require action on the part of BLM or what that action might be. If elk numbers drop by ten percent, does oil and gas development continue on the Jack Morrow Hills? What if there is a 25 percent reduction in sage-grouse lek use? What level of road density is acceptable in crucial elk habitat? What measures are appropriate when unacceptable levels of damage to resource indicators are established? What degree of proof is required in order to impose "new" restrictions on development. Without this information, neither the agency nor the public will be able to make a determination as to whether a proposed activity conforms to the JMH CAP. For example, when the industry nominates additional lands for leasing in the planning area or requests APDs on existing leases, how will the agency determine what lease stipulations or conditions of approval are necessary in order to conform with the current "management strategy?"

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The supplemental draft EIS describes the area impacted by oil and gas development incorrectly. The impact area extends well beyond the lands actually covered by drill pads and roads. Noxious weeds spread from disturbed areas and extend out perpendicularly. Dust, oil, toxic spills, and trash expand from the site. Noise as well as air and water pollution travel for miles. All of this must be included in any calculation of habitat loss resulting from oil and gas development.

Response:

All operators must comply with all state and federal requirements during exploration and production activities. Impacts resulting from oil and gas development discussed in Chapter 4 of the supplemental draft EIS include direct and indirect impacts.

Comment:

There is confusion already about what lands will be made available for leasing. Map A17-1 attached to the Preliminary Adaptive Management Implementation Strategy contained in Appendix 17 seems to indicate that under the Preferred Alternative, some lands will immediately become available. Yet, Appendix 9 refers to an elk study to be completed in two years and states that decisions about opening lands to leasing will be made when the elk study is finished (supplemental draft EIS at A9-5).

Elsewhere, the supplemental draft EIS states that "leases will be held under suspension until indicators show acceptable effects or a positive response of resources to development . . .." (supplemental draft EIS at A17-3). On the very next page, BLM announces, that "existing lease suspensions will end with the signing of the record of decision for the JMH CAP."

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

It is impossible to tell from the supplemental draft EIS or the maps provided what lands will be available for leasing under standard lease terms and what lands will require NSO stipulations or other restrictions.

Response:

Table 2-2, Map 50, and Map 54 in the final EIS provide this information.

Comment Number: 100,377

Comment:

In introductory sections prior to Chapter 2, the draft EIS states, "fluid minerals leasing decisions and locatable mineral decisions ... will be determined in the JMH CAP..." (Abstract, p. ii). A "primary objective" of the CAP is to make decisions regarding leasing and development of fluid minerals. Other objectives included determining appropriate levels and time of leasing and development (1.2, p. 1-2). However, the Preferred Alternative defers decisionmaking to implementation of an adaptive management strategy. Decisions will be made by a team of managers rather than the CAP. Allowance for case-by-case exceptions blurs CAP direction even more. For example, "exceptions to lease stipulations and mitigation measures, identified as Conditions of Approval attached to an Application for Permit to Drill, can be requested and would be considered on a case-by-case basis" (2.2.5.1 p. 2-17; Appendices 4, 5).

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

The criteria for exceptions to lease stipulations and mitigation measures (COAs) are based on site-specific analysis as described in Appendixes 4 and 5. The criteria for granting waivers, exceptions, and modifications to restrictions show what information goes into making such a determination. Professional judgment must play a key part in the Bureau's recommendation. An Administrative Determination will be made, or NEPA documentation will be prepared when considering a decision to grant a waiver, exception, or modification. Details of how the criteria are applied will be documented as part of each decision.

Comment Number: 100,378

Comment:

Although the BLM claims that the preferred alternative will be a moderate approach to development, providing "for controls on leasing and levels of drilling activity to prevent irreversible adverse impacts to sensitive resources..." in actuality your projections for drilling reflect the fastest and most unfettered drilling in the history of the area. In Appendix 13 the BLM states, "Past drilling activity shows that the highest 5-year rate was during the 1978-1982 period when 48 wells were drilled. Few land restrictions were in place at that time and most of the area was open for development. Assuming that existing requirements for protection of other resources would allow drilling activity at a level near the maximum rate observed for a 5-year period, a maximum rate of drilling can be projected. At a rate of 46 wells per 5-year period, an additional 205 wells could be drilled in the JMH..."

Response:

Drilling in the area will be regulated under the ROD regardless of how many wells are estimated to be drilled.

Comment:

The fact that your proposed number of wells is based on the fastest historic rate of drilling with the fewest restrictions--calls into question the agency's commitment to implement and enforce an adaptive management strategy that will truly impose stipulations and restrictions on drilling that will protect resources. Instead, the BLM appears to anticipate in its preferred alternative a "no-holds-barred" approach

to drilling in the JMH. I have little faith that the adaptive management strategy has any real meaning given your plan to expedite drilling at the fastest pace on record.

Response:

The management alternatives and criteria to protect the resources included in the supplemental draft EIS would be implemented regardless of the number of wells to be drilled in any particular area of the planning area.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

In Section 4.8.1 of the supplemental draft EIS, the agency states, "Currently there is no active coalbed methane production in the planning area because of low gas prices and water disposal costs." Later it adds, "Coalbed methane wells produce at low rates and the projected producing wells would not contribute significant production to the much larger volume expected at conventional wells." Further, on Page 4-124 it concludes, "No coalbed methane project has currently proven to be economic in the Wyoming part of the Greater Green River Basin."

The BLM chose to propose 50 coalbed methane wells (two projects at 25 wells, each comprised of 16 dewatering and 9 gas wells) because that was the "assumed level of activity for which economic viability could be estimated" (4-124).

BLM appears to make every effort to try to show that these wells can be productive. In their economic analysis in Appendix 16, Economic Impact Analysis Methodology, they assume that these 50 wells drilled for exploration and development would average less than 1,200 feet in depth. However, this runs contrary to estimated depths of coal seams in the area and past coalbed methane drilling. Past wells in the area have had to drill to depths of 3,400-6,600. In the analysis, the BLM shows economic benefits from the exploration stage of these coalbed methane wells, but they then concede later that "it was assumed that coalbed methane development would not lead to additional gas production in the planning area."

Throughout the BLM's description of coalbed methane production, it also notes the additional costs required for produced water disposal: "previous attempts to develop coalbed methane in this part of southwestern Wyoming have produced water with elevated total dissolved solid contents, which were reinjected into the subsurface to comply with surface water quality standards for the Colorado River basin" (A-13-14). The BLM notes that in the past, coalbed methane wells have been abandoned due to low prices, disappointing results, and "environmental concern over disposal of produced water."

Response:

As discussed in Appendix 13, the area is in a very early stage of coalbed gas exploration. There is no information available in the immediate area to determine what well productivity and success rates may be. To ensure that potential short- and long-term impacts to drilling 50 exploratory wells are addressed, all wells were assumed to be productive. This allows us to determine the maximum negative impact on other resources that drilling and producing these wells would cause.

As you noted, the average drill depth is not correct in Table A-16-7. It will be changed from 1,200 feet to 5,000 feet in the final EIS. In addition, the discussion of economic benefits from development will be modified to indicate an economic benefit from production of coalbed gas.

Comment Number: 100,379

Comment:

Actual findings from exploration, possible new rules and regulations, events elsewhere, changes in price and supply, and new developments in alternative sources of energy could shift the outcomes of your plan considerably. You are really shooting at a moving target that has mineral development as its bulls-eye. Presumably you understand much better what you have in the conditions of and problems with Heritage Resources, Air and Water Quality, Recreation, Livestock Grazing, etc. Yet your Preferred Alternative is a speculative "plan" in which mineral development would dominate, to the diminution of all those other public land uses. The Public is left hoping that you miss the bulls-eye and concentrate on the outlying circles - the ones you should have aimed at in the first place.

Response:

The Preferred Alternative examined all resources and the impacts to them. Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The number of permitted new wells in your Preferred Alternative is not large enough to make a real difference. At the same time, the number is too large to protect the whole resource. Just what sort of energy relief would 205 liquid and 50 CBM wells bring to the nation's needs? But there will not be just one foot but many feet in the door if you offer new leases and permit new wells. You will be overwhelmingly pressured to allow denser development.

Response:

The actual volume of development cannot be determined until drilling, completion, and evaluation of reservoir characteristics for conventional and unconventional gas wells are completed.

Comment:

In our experience with grazing lease renewals, a no-grazing alternative is offered along with the no-change and new alternatives. NEPA requires a full range of alternatives but your current supplemental draft EIS doesn't provide that range. Why isn't there a Preservation Alternative in the JMH CAP that would prohibit new mineral leasing, exploration, and development in the CAP area and provide for the reacquisition of existing leases?

Response:

Alternatives that included a closure to livestock grazing and a closure to mineral leasing were considered in the supplemental draft EIS, but eliminated from detailed analysis. Refer to Section 2.1.3 of the supplemental draft EIS for a detailed discussion. The alternatives analyzed in detail cover a wide range of management options from a development alternative to a preservation alternative. Alternative 2 closes most of the planning area to new leasing and considers buying back existing leases.

Comment:

In the JMH CAP area, we, the public, have to depend upon you at BLM to be as vigilant and defiant. Are we justified in that hope? What is the amount of bonding that you require from Operators to assure us of the guarantee of being "made whole again?" Does a bond cover many wells scattered over an area, or

each well? How do we know that, a few years hence, BLM won't drop or decrease bonding as the result of some executive order or regulation change?

Response:

Each bond is reviewed for adequacy with every application for permit to drill and remains in effect from initiation to abandonment of the well. The bond amount can be raised if necessary. Wyoming has a very proactive idle well program.

Comment:

Please list the oil or gas wells that have been restored so far in this area, by name of company. With the four or five decades of mineral development already under your belt, you must have some. Please state directions so that the reclamation sites may be visited by the public to see the quality of restoration. Please include GPS coordinates.

Response:

A list of all wells drilled in the JMH CAP planning area is included in Table 3-21 of the supplemental draft EIS, which includes Section, Township, Range, and footages.

Comment Number: 100,381

Comment:

If industry hits pay-dirt, what will stop them from further exploiting this land and from BLM allowing them to do so? Looking at the plan, it seems that industry believes that several hundred oil and gas wells will potentially be developed under its auspices. Indeed, during the last Jack Morrow plan, EPA surmised that at least 800 coalbed methane wells would be developed in the planning area. Knowing BLM's loose relationship with industry, I have little faith that the "255" well guideline will stick.

Response:

Unless a complete evaluation of the proposed drilling scenario is done, the actual number of wells to be drilled in the area cannot be determined. If more are determined, an additional planning effort will be completed.

Comment Numbers: 100,383; 100,390

Comment:

Increased recreation activities in the JMH CAP planning area, such as hunting, camping, backpacking, hiking, horse-packing, OHV use, mountain biking, sightseeing at historic trails and places, horn hunting, wild horse viewing, photography, and many more, may have a negative impact on all of the resources BLM believes oil and gas activity will impact.

BLM must include analysis and mitigation for the management of all of these activities on public lands within the JMH project area. For instance, BLM does not subject typical OHV use to the same rules, regulations, and mitigation measures that it imposes on geophysical activities. It is unreasonable to impose severely restrictive limitations on a permitted use and ignore the impacts of other uses and users simply because they don't require a specific, per occurrence approval from BLM.

Response:

Impacts resulting from all resource uses within the planning area, including recreational activities, were analyzed in Chapter 4 of the supplemental draft EIS.

Comment:

A staged leasing and development approach is simply not a reasonable management prescription for the oil and gas industry. Oil and gas companies determine the timing of leasing, drilling, and field development based on commodity prices and availability of budget monies, not when the BLM is ready to allow activity. This approach potentially prevents an operator from securing a viable lease block prior to development, a common and necessary industry practice. Staged or sequential development raises serious issues and concerns with the protection of correlative rights for adjoining federal leases held by different operators.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

BLM must simply recognize that if any oil and gas development proposals are made within the JMH project area, an ensuing NEPA analysis will address all of the same issues in a much more comprehensive and thorough manner. It is not necessary for BLM to lay out a process in this Coordinated Activity Plan when that could be much more reasonably applied in a project-specific setting, in somewhat of a different form.

Response:

In accordance with NEPA regulation and BLM guidance, the major components of planning actions must be stated and analyzed in the Coordinated Activity Plan, leaving the more site-specific actions and analyses to be addressed at the activity planning level.

Comment Number: 100,384

Comment:

APC agrees with the need to protect and even improve resource conditions when opportunities arise; however, BLM must be equally attentive to the needs of our nation for energy resources and recreational needs. By merely "accommodating" the need for public access and "providing opportunities" for mineral extraction/energy development, the proposed goals fall short of that mark. APC proposes that BLM's management goals for the JMH CAP planning area should be to ensure the area is managed in a manner that encourages exploration for mineral extraction while protecting other resource values. Regrettably, the preferred alternative falls short of this goal.

Response:

All mitigation issues have been evaluated in regard to oil and gas exploration and production and the public interest. Options are provided in the management alternatives to ensure compliance with our requirements. This approach will ensure balance between the resource values and energy needs.

Comment:

APC is supportive of BLM efforts to secure access to the oil and gas resources of the JMH CAP planning area; however, we oppose staged leasing, timed development, and later-to-be-determined mitigation and implementation via the proposed Adaptive Management Strategy (Strategy). Overall, APC believes that the Strategy's inherent shortcomings will quickly become more of a hindrance to resource planning than an asset. APC considers the Strategy to be impractical, unsustainable and unreasonable. Again, basing future leasing and development decisions on the Strategy is not supported by APC, and we do not believe that the Strategy can be realistically implemented. As proposed, the Strategy introduces uncertainty and added risk to oil and gas development in the area. As currently drafted, the EIS does not identify and discuss the barriers to successful implementation of the Strategy. These must be addressed to fully and fairly assess the potential impacts of the Strategy.

APC agrees with BLM that it has authority to suspend leases in certain situations or to consider new suspensions as existing suspensions expire; however, that authority cannot be extended to indefinitely suspend leases awaiting the Strategies unknown signal that development can now occur.

The Rock Spring RMP suspended leases in the JMH CAP planning area until such time that the JMH CAP was approved. APC believes that once the JMH CAP ROD is signed, BLM can no longer hold those leases in suspension. Any continued, indefinite suspension of the leases may raise a takings claim, and the potential impact of such claims should be analyzed. The leases were issued by BLM under the land planning decisions and went into effect at the time and therefore cannot be indefinitely deferred with a new land planning decision. Once the JMH CAP ROD is issued, BLM's management of surface uses on these leases must be in accordance with 43 CFR 3101.1-2.

APC is also concerned that the proposed Adaptive Management Strategy will establish a process whereby future leasing and development decisions may not end with simply acquiring good science. For instance, what mechanism will BLM employ to prevent interpretation of data by the experts from degenerating into endless arguments? Indeed, even in light of the concerns for collecting valid scientific data, convincing others that the science warrants changes in management may be more time consuming and challenging than obtaining the data, and also subject to further political influence.

Under these conditions, it appears that there will be no end game for the oil and gas industry to have enough certainty that a large enough block of land will be made available for leasing to warrant investment in exploration projects. The proposed Strategy is akin to a race where there is no finish line. The Strategy will define the resource indicators that are to be monitored, but there are no fixed values for determining when adequate proof has been presented to open additional lands to exploration, leasing or development. APC believes that it is unlikely that the oil and gas industry will make investments under such a regime.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Although monitoring of resource indicators remains a component of the new strategy, it will not delay leasing decisions in Areas 1 and 2. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

Under §202(e)(3), BLM is required to notify Congress of any management decision that excludes or totally eliminates major uses, for two or more years, with respect to a tract of land of more than 100,000 acres. It is unclear from the Adaptive Management Strategy, as currently delineated, whether the Strategy will meet this threshold. Additionally, it is equally difficult to determine the total number of acres where leasing decisions have been or may be indefinitely deferred. Unless BLM can definitively show that leasing decisions, as affected by the adaptive management strategy, are less than the 100,000-acre limit or if the limit is exceeded that leasing will occur within a two-year period, is reporting to Congress required?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Reporting to Congress would not be required with the management prescribed in the Proposed JMH CAP. No uses would be totally eliminated. Thus, the 100,000-acre elimination limit would not apply.

Comment:

An identified goal of the proposed Adaptive Management Strategy is the need to "provide a timely response to unnecessary/undue environmental change." This statement is contradictory to BLM's long standing practice of identifying and imposing environmental mitigating measures such that the agency complies with the intent of FLPMA §302(b) in "preventing unnecessary and undue degradation of the lands." BLM has always analyzed each action on its own merit, applied mitigation tailored to the specific land resources and proposed action to ensure that no "unnecessary and undue" impacts occur. For whatever reason, BLM now claims that oil and gas interactions with the environment are of such an uncertain nature that mitigation measures can no longer be relied upon to prevent unacceptable environmental impacts. Although APC agrees that there will always be some uncertainty associated with assessing potential impacts, we also believe that the scientific literature developed over the years provides a sound basis for assessing the potential impact. Therefore, we believe BLM's discussion is unfounded and should be removed.

A criterion for selecting the preferred alternative included an analysis of whether the preferred alternative "retains reasonable accessibility of public lands for purposes of public access, public land use, and resource development." For the above stated reasons regarding the Strategy, APC believes that the preferred alternative cannot meet this test. There preferred alternative represents an unprecedented assertion regarding what BLM believes to a significant uncertainty regarding the environment and its interaction with oil and gas development. It is indeed a shortcoming of the preferred alternative as well as ironic that by implementing the proposed adaptive management strategy, BLM will actually increase the uncertainty and risk involved with developing oil and gas resources on federal lands in and around the JMH CAP.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The preferred alternative would apply the same mitigation measures and limitations applicable to ROWs to geophysical operations, even though geophysical operations are vastly different, involve di-minimis surface disturbance, are temporary in nature, and are a permitted activity. Following the restrictions placed on ROWs, geophysical activities would be limited to coincide with existing roads, trails or other ROWs. There is no scientific basis for imposing such restrictions, and geophysical activities should be treated differently in the final EIS. Any mitigation imposed on such activities should be commensurate with the minimal potential impact posed by such activities.

Geophysical exploration, even when on-highway type vehicles are utilized, is immensely different than impacts from ROWs; however, the document fails to make any distinction at all. Without supporting documentation that geophysical activities cause impacts of a similar nature (i.e., duration, timing, season of use, types of vehicles used, travel speeds etc.), the Preferred Alternative in its application of ROW restrictions to geophysical activities is both arbitrary and capricious.

Response:

An authorized officer can grant exceptions to these limitations provided no adverse impacts exist (supplemental draft EIS, P 2-111). Moreover, geophysical activities can be performed in "avoidance areas" with proper mitigation. The only limitations are in WSAs.

Comment:

APC believes that BLM can properly manage and mitigate for oil and gas development under its traditional means, whereby an exploration well is proposed and if successful, a number of confirmation wells are allowed to be drilled and then prior to full field development, a field level NEPA document is completed. Incorporating this process along with a management approach that monitors and modifies performance-based standards should be the direction taken by BLM for the JMH CAP planning area.

Response:

In accordance with NEPA regulations and BLM guidance, the major components of planning actions must be stated and analyzed in the Coordinated Activity Plan, leaving the more site-specific actions and analysis to be addressed at the activity planning level.

Comment Number: 100,385

Comment:

It is unclear whether existing leases that currently do not have stipulations will be required to comply with the proposed resource management plan stipulations or conditions. The Preferred Alternative states that "for existing leases without stipulations, COAs for APDs would allow necessary impacts for development to be technically feasible or economically viable" (supplemental draft EIS at 2-83). Please clarify the application of new stipulations to existing leases.

Response:

BLM must abide by the stipulations attached to the lease; restrictions deriving from specific, nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses, or users not addressed in the lease stipulations at the time operations are proposed.

Comment:

In addition to better stipulations on mineral development, BLM should be more specific about where it will allow mineral development. To date, 156 wells have been drilled, of which only 66 were completed as producing wells (supplemental draft EIS at A13-8). The preferred alternative proposes an estimate of 205 oil and gas wells and 50 coalbed methane wells during the next 20 years. These additional wells may not appear to be that many; however, for an area as undeveloped as Jack Morrow Hills, 255 additional wells could have a detrimental effect. Therefore, we suggest BLM limit mineral development to only those areas which have a medium or high potential, and that BLM institute clear stipulations as a method of mitigating or prohibiting activities that cause adverse impacts on cultural and historic resources.

Response:

Tables 2-1 and 2-2 and Appendix 17 describe alternatives, criteria, and requirements that, upon approval of the plan, will be enforced by the BLM and require compliance by the operators in the planning area to protect resource values and uses regardless of the number of wells to be drilled or completed.

Comment Numbers: 100,388; 100,389

Comment:

The BLM's Preferred Alternative calls for 205 new wells to be drilled in the JMH CAP Planning Area. Not only is this too much, it is likely inaccurate. We have all seen what can happen after the oil and gas industry gets its foot in the door. For example, the Jonah Field just west of the Jack Morrow Hills has been growing exponentially. Now with 450 wells and 40-acre spacing (up from the original 160 acre spacing), they are asking for 1,250 additional wells with as little as 16-acre spacing. They just don't stop. And it's not as if there's a shortage of wells surrounding the JMH CAP planning area--900 on the Pinedale Anticline, 3,000 at the Continental Divide/Wamsutter II Project, 1,300 on the Fontenelle Project, 1,300 on the Moxa Arch Project, with 635-plus more on smaller projects. Then if that is not enough, 1,240 wells are proposed for the Seminoe Road CBM Project, 3,880 wells for the Atlantic Rim CBM Project, and another 473 CBM wells and 1,096 natural gas wells proposed for smaller projects surrounding the Jack Morrow Hills.

Response:

Unless a complete evaluation of the proposed drilling scenario is conducted, the actual number of wells to be drilled in the area cannot be determined. If more are determined, another planning effort must be completed.

Comment Number: 100,390

Comment:

Throughout the document, BLM refers to the concept of an "adaptive management process" being implemented under the Preferred Alternative. PAW supports an adaptive management and monitoring process with respect to developing reasonable performance-based standards rather than prescriptive mitigation measures because it encourages innovation to deal with changing conditions and new technological advancements; however, BLM must honor current valid existing lease rights in the area. We do not support performance based or adaptive management and monitoring that is unspecified and results in later-to-be-determined mitigation and compliance requirements.

BLM claims under the Preferred Alternative that leasing would be considered based on industry interest and on monitoring of sensitive resource indicators in accordance with a new "adaptive management strategy." BLM has already squandered ten years trying to determine how it will manage the JMH CAP

planning area, through the GRRMP and through a number of subsequent environmental impact statements associated with the JMHCAP. Despite all these studies, BLM now claims it still cannot make leasing and development decisions until additional site-specific monitoring is completed in the area. This approach is unacceptable because BLM is once again deferring leasing decisions pending further study.

Under the Preferred Alternative and the adaptive management and monitoring process, BLM notes that if it is determined that the planning area management objectives are not being met, certain areas would remain unavailable for leasing.

BLM has not included information in the JMHCAP documents that confirms the agency has the funding to complete these additional studies. Once again, industry could be left with indefinite delays in leasing, exploration, and development while the Rock Springs Field Office attempts to pull together the funds required to carry forward with its proposed program. The same funding concern applies to the declaration under Alternative 1 that BLM may wish to buy back or exchange leases. The viability of such a buy-back scheme is highly questionable and industry would not be willing to wait for BLM to determine if it has the ability to buy back a lease.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Funding is always questionable with any project. The collection of much of the indicator data needed to implement the new strategy is part of the day-to-day duties of different governmental agencies or groups. Use of this readily available information has little impact on the need for additional funding or manpower.

The buy back of leases was an issue raised during the original draft EIS comment period and scoping for the supplemental draft EIS and was therefore evaluated under Alternative 2 as part of the range of alternatives. BLM would pursue funds through the budget process to support land use decisions.

Comment:

The concept of "staged leasing" is not a reasonable management prescription for industry. Staged leasing prevents an operator from securing a viable lease block prior to development, and presumes resource degradation as a result of leasing. Implementing "staged leasing" as a land management tool is unreasonable and unacceptable for industry and will discourage companies from investing in an area that may have significant oil and gas potential.

Under the Preferred Alternative and adaptive management and monitoring process, BLM notes that satisfactory reclamation of surface disturbance may be required before additional surface disturbing activities would be allowed in certain areas or before existing leases would be released from suspense. The concept of "staged development" will likely be a major hurdle for companies planning their investment opportunities in the area. While BLM may have the authority to issue a suspension for leases or consider new suspensions for leases that have been issued, that authority cannot be extended to hold leases indefinitely until the agency arbitrarily chooses to release them.

Once the JMH Record of Decision is finally issued and it is determined that an area is available for leasing and in fact operators have acquired leases that have been in suspense, BLM must release those

suspended leases. Again, PAW recognizes BLM's authority to issue a suspension, but this scenario of staged development goes far beyond the intent of lease suspensions and PAW questions its legality.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

In a worst-case scenario with the development of 205 wells (5 acres of initial disturbance per well), a total of 0.2% of the surface will be disturbed. After initial disturbance and reclamation, long-term disturbance will result in a disturbance of 0.1% of the entire JMH CAP planning area (3.2 acres per well). It is highly unlikely that oil and gas will have a detrimental affect on any other resource in the area.

Response:

As stated in the Preferred Alternative, Table 2-1, surface disturbance is only one of several factors that BLM considered in the analysis of impacts on resource uses and values.

Comment:

BLM regulations ensure that virtually no surface damage is associated with seismic activities. Moreover, BLM's 3150 Manual provides specific guidance and requires a site-specific mitigation/operating plan to be in place prior to commencement of activities. In concert with these requirements, in a relatively short time, evidence of properly conducted seismic surveys fades, regardless of the technology used. Therefore, it is unnecessary for BLM to limit geophysical exploration activities that include vehicle use and the use of explosives in areas with special status plants. Typical OHV use is not subject to the same rules, regulations and mitigation measures imposed on geophysical activities. Therefore, it is unreasonable to impose the same limitations on a permitted use that are used on nonpermitted uses. Notably, avoidance measures can be taken to protect Sensitive Plant Species without entirely closing an area to geophysical exploration. We recommend that BLM reconsider its management strategy for this activity.

Response:

Under the Preferred Alternative, the entire planning area is open to geophysical activities with appropriate mitigation, even in sensitive areas (Page 2-133, supplemental draft EIS). Activities in WSA areas and ½ mile of the Pinnacles geological features are prohibited to geophysical activities.

Comment Numbers: 100,397; 100,459

Comment:

The draft supplement to Jack Morrow Hills study implies that from acquired information that the Dickie Springs/Oregon Gulch gold deposit may only hold 1 million ounces of gold and that the potential for a large-scale mining operation is low. It is my formal request that I be sent the information that was obtained to evaluate and determine this 1 million ounce figure. We strongly protest the assumption that the potential for a large-scale gold mining operation exist.

To prohibit the removal of valuable ore on any scale of mining would be a breach of the 1872 mining laws. We also object to the withdrawal of half of this deposit from mineral entry, namely, South Pass Summit, before an in depth scientific and geological survey has been completed on it. All historical data suggests that this area may hold a world-class gold deposit. Until a new and updated survey is performed by a 3rd party of qualified researchers, historical data will have precedence.

Response:

The resource estimate of 1 million ounces provided in the supplemental draft EIS was an internal working estimate developed by BLM during a review of scientific information and the operational history of claims in the planning area. There is not sufficient information for a quantitative estimate of gold resources in the planning area at this time, and therefore the numerical estimate of gold resources has been removed from the description of locatable mineral resources in the final EIS. The resource estimate was not used in the formulation of management alternatives for locatable minerals. The management actions for these resources were based on the current and historical levels of exploration activity and protection of other resources in the planning area. Because the resource estimate was not used as part of the basis for formulation of alternatives, the management actions have not been revised for locatable mineral resources.

Comment Number: 100,419

Comment:

The Preferred Alternative would allow in excess of 200 wells to be drilled - but where will it stop? Is this simply the 1st step in the "rural industrialization of the JMH? I see that the BLM Pinedale office is requesting comment on the "Jonah Infill Drilling Project." This project started out at one-well/80 acres, went to one/40 acres, and now industry is back yet again to request 10-20 acre spacing. Can BLM guarantee that such revisions will not be allowed in the JMH? One need only look at the Jonah Field or the Powder River Basin to see what is in store for the Red Desert.

Response:

Unless a complete evaluation of the proposed drilling scenario is done, the actual number of wells to be drilled in the area cannot be determined. If more wells are determined, another planning effort would be completed.

Comment Number: 100,432

Comment:

A concept of staged development has been proposed, including suspension of existing leases. One of CAMXs primary objectives is to obtain an acceptable return on its capital investment. Significant delays in the ability to timely explore and efficiently recover any discovered economic resources opposes our business objective for capital already invested - specifically the Gold Coast Federal Unit.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,433

Comment:

I believe that it is necessary for the Bureau to prepare a Statement of Adverse Energy Impact before issuing any Record of Decision, which adopts the preferred alternative.

Response:

The Statement of Adverse Energy Impact is issued only when an action is denied. No actions have been denied in this document.

Comment Numbers: 100,433; 100,440

Comment:

The Preferred Alternative described in the supplemental draft EIS suffers from the same flaws which plagued the original draft EIS; that is, the Preferred Alternative would continue to delay the oil and gas leasing decisions which were first deferred in the Green River Resource Management Plan more than five years ago. BLM is shirking its decision-making responsibility under the Federal Land Policy and Management Act by continuing to defer these important decisions. If the Preferred Alternative is selected, the BLM must comply with the withdrawal reporting provisions of Section 204 of FLPMA and report to Congress on the effect of this decision.

Last year the Wyoming Geological Survey estimated that some 3.9 trillion cubic feet of gas and 535 million barrels of oil were technically recoverable from the Jack Morrow Hills area. However, under the Preferred Alternative (as well as the no action, the conservation and the preservation alternatives) those resources are likely to remain unavailable. The supplemental draft EIS recognized that, with the exception of the Nitchie Gulch Field in the southern part of Jack Morrow Hills area, this highly potential area is still largely unproven and wildcat in nature (see Appendix 13). Any responsible oil and gas producer who decides to take the risk of exploring a wildcat area must do so only after assembling a large enough block of leasehold acreage so that, if that drilling risk is successful, it can obtain an adequate return on the high risk dollars invested. The BLM has, in other contexts, recognized this need for control of a reasonable acreage block (see Prima Oil & Gas Co., 148 IBLA 45, 51 (1999)(BLM policy to suspend leases when "a lessee is unable to explore, develop, and produce leases due to the proximity, or commingling, of other adjacent federal lands needed for logical exploration and development that are currently not available for leasing"). The vague phased leasing and development program described in the Preferred Alternative prevents an oil and gas producer from assembling that block of acreage and so essentially thwarts wildcat exploration in the area. The BLM is deceiving itself and the public when it pretends that the Preferred Alternative will make the oil and gas resources in the area available for development; the true impact of this alternative on the energy resources in the area must be disclosed in the Final Environmental Impact Statement. A foreseeable effect of the preferred alternative would be a significant reduction in the amounts of bonus bids for leases; that fiscal impact should also be disclosed in the final EIS.

Page 1-2 of the supplemental draft EIS states that a primary objective of this CAP effort is to make leasing decisions. If the Preferred Alternative is adopted, that primary objective is not accomplished. Given the length of time it took to prepare the supplemental draft EIS and the description of the items remaining to be accomplished before implementation of the Preferred Alternative, the inexorable conclusion is that it will be another several years before any decision is made about leasing, or even developing existing leases, within the Jack Morrow Hills. Not only is this interminable delay an inexcusable waste of public time and money, it also constitutes a decision to remove more than 100,000 acres of land from a principal or major use (i.e., mineral exploration and production) for two or more

years. Such management decisions are required to be reported to Congress under Section 202(e) of FLPMA. There is no mention anywhere in the supplemental draft EIS of BLM's obligation to comply with the requirements of Section 202(e) and 204 of FLPMA to report to Congress management decisions excluding a principal or major use and withdrawals of more than 5,000 acres.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The supplemental draft EIS states at Page 4-124, under the No Action Alternative, that a loss of development potential in the core area "may represent a significant impact to individual operators of oil and gas development." While this statement is true as far as it goes, the EIS should also disclose that there will be a significant impact on Federal and State treasuries as a result of that lost production.

Response:

Figures 17 (F-12, supplemental draft EIS) and 18 (F-13, supplemental draft EIS) show the Total Earnings by alternative and the Estimated Ad Valorem Tax Revenues from JMH. The amounts differ by only a few thousand dollars.

Comment:

Although the supplemental draft EIS pays lip service to its intention to honor valid existing rights (see Page 2-16), the "phased development" contemplated by the Preferred Alternative would severely compromise the valid existing rights of current oil and gas lessees in the Jack Morrow Hills. The BLM appears to believe that suspension of existing leases is sufficient to protect any valid existing rights.

The formulation of the Preferred Alternative is thus based on arbitrary and capricious disregard of the time value of money. As indicated in Appendix 16, the lessees of those suspended leases have invested significant amounts in purchasing the leases and/or maintaining them in effect. However, until the leases can be developed, with the potential for returning revenues to the lessee (and not incidentally to the federal and state treasuries), the lessees can obtain no return on those investment dollars. As any college finance or economics student could explain, there comes a point in time (generally six to ten years depending upon the rate of return employed) at which it becomes impossible to recoup a return on those invested dollars. The final EIS needs to account for that basic economic fact and explain how the lessees will be compensated for the loss of their sunk investment dollars by virtue of the apparently indefinite suspensions of their leases.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

Table 4-3, which purports to compare the areas that would be closed to new oil and gas leases under the various alternatives, is virtually useless with respect to the preferred alternative. In the first place, it does not show that the WSAs would be closed to new leases and, of course, WSAs are not available for lease under the Mineral Leasing Act. The table appears to say that 142,630 acres of "sensitive resources" will be closed to new leasing under the preferred alternative. I cannot tell if this total includes the acreage in current WSAs or whether the acreage totals for the other alternatives include or exclude the WSA acreage. Similarly, Map 54, purporting to show the lands open and closed to new leases under the preferred alternative, is misleading. There is no legend shown for the large white areas on the map, which presumably correspond to the wilderness study areas. Those areas should be actually labeled as closed to new leases.

Response:

WSAs are indeed closed to new leasing. In Table 4-3 of the supplemental draft EIS, WSAs were included in the acreage total (142,630) for the Preferred Alternative, but were not indicated as being closed with an "X" in the corresponding column. This has been corrected in the final EIS. Map 54 has also been modified in the final EIS to show that WSAs are nondiscretionary closure areas.

Comment:

Footnote 3 to Table 2-2 states that in areas subject to seasonal limitations, controlled surface use and no surface occupancy stipulations, under all the alternatives, "all activities would be subject to intensive mitigation including offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central and battery/facilities, pipelines and power lines concentrated in specific areas, etc." Where in the text are those "intensive mitigation" measures discussed? Where is the analysis of the impacts of those measures on existing oil and gas leases and on potential royalty and tax revenues?

Response:

Footnote 3 to Table 2-2 only applies to Alternatives 2 and 3 and the Proposed JMH CAP, which has been clarified in the final EIS. A discussion of these potential mitigation measures has been added to Sections 2.5.4, 2.6.4, and 2.7.4 of the final EIS. Reference to these discussions was also added to Sections 2.5.6, 2.6.6, and 2.7.6 of the final EIS. Impacts to oil and gas development are discussed in Section 4.8 of the supplemental draft EIS and final EIS. The analysis includes discussion of the potential for reduced development and increased operating costs resulting from lease stipulations and mitigation measures. The discussion of these impacts has been slightly expanded in sections 4.8.1.1 and 4.8.1.6 of the final EIS. Such impacts are also reflected in the estimated number of wells expected to be drilled for each alternative (Appendix 13).

Comment:

What is the rationale for requiring no surface occupancy stipulations on oil and gas leases in all Class II VRM areas (supplemental draft EIS, Page 2-28), when range improvements or water developments are assumed to produce "only a low level of change to the landscape," (supplemental draft EIS, Page 4-45)? How does a straight-line fence or a stock watering tank differ in visual impacts from a natural gas producing wellhead (the impacts during drilling are only temporary)?

Response:

Most oil and gas locations in this area are equipped with two 20-foot tanks for holding liquids, a wellhead, a separator and sometimes a dehydrator. This equipment is quite different from the equipment used for a stock-watering tank.

Comment Number: 100,438

Comment:

The BLM's Preferred Alternative is limited in scope, in that the alternative puts oil and gas development above all other interests and fails to consider the long-term impacts oil and gas development would have on wildlife habitat, grazing, hunting, recreation, Native American holy sites and air quality.

The BLM should provide for limited opportunities for mineral extraction and energy development while protecting other resource values. While providing for limited opportunities for extraction and development the BLM would reduce the potential for conflict in the area due to large-scale oil and gas and mining activities authorized under the BLM's Preferred Alternative.

Response:

All impacts (both short-term and long-term) resulting from mineral development in the planning area were analyzed in Chapter 4 of the supplemental draft EIS.

All activities will be managed simultaneously without negative impact on resources values. BLM is providing various opportunities for mineral development while minimizing the potential for conflict among resource uses and values. The goal of all the management alternatives is to reduce the potential for conflict among resource uses, while allowing uses of varying degrees. Operations within the entire planning area will be monitored to reduce conflicts and ensure protection of resources and resource uses regardless of activity scale.

Comment:

The BLM must provide for areas that are closed to new leasing within the planning area. The BLM should adopt a buy-out or trade-out plan in the Jack Morrow Hills. By suspending leases in the planning area the BLM will allow for funding options to be pursued for lease buy out or exchange.

Response:

Areas have been identified for closure to new leasing under the management alternatives (see Table 4-3 and associated maps, supplemental draft EIS). The buyout option was analyzed in Alternative 2. Buyout or exchange of existing leases from willing sellers may be considered on a case-by-case basis.

Comment:

The BLM should balance oil and gas development with other multiple uses and values.

Currently these plans make virtually all lands within the Jack Morrow Hills Area available for oil and gas development. The BLM must pursue further analysis of the JMH CAP planning area. As proposed the BLM leaps before it looks, specifically, the BLM fails to look at the long-term implications development would have on the areas. The BLM should not fast-track development. Although the mandate from Washington, DC, pushes for development on public lands, the JMH CAP planning area is clearly an area where full analysis is needed. Without specific data on present and future conditions, we simply lack the

information to determine the consequences of proposed oil, gas and minerals development and to design realistic mitigation. We need more solid field science and monitoring.

Response:

The supplemental draft EIS evaluated all options in detail to assure a balanced approach was recommended that allows opportunities for mineral exploration and production and for the BLM to protect the resources. Additionally, as exploration and production activities proceed, impacts (short and long term) will be evaluated in subsequent NEPA documents.

Comment Number: 100,440

Comment:

The supplemental draft EIS states at Page 4-124 that, under the No Action Alternative, a loss of development potential in the core area "may represent a significant impact to individual operators of oil and gas development." While this statement is true as far as it goes, the EIS should also disclose that there might be a significant impact on Federal and State treasuries as a result of that lost production.

Kerr-McGee is opposed to the Preferred Alternative outlined in the supplemental draft EIS and favors the adoption of Alternative 1. Even the No Action Alternative would be preferable to the Preferred Alternative from the perspective of the owner of existing oil and gas leases, such as Kerr-McGee. We urge the BLM to carefully consider the fiscal impacts of its Preferred Alternative both on production opportunities lost and on costs to the government to compensate lessees for loss of their valid existing rights. Moreover, we believe that it is necessary for the Bureau to prepare a Statement of Adverse Energy Impact before issuing any Record of Decision, which adopts the Preferred Alternative.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Figures 17 (F-12, supplemental draft EIS) and 18 (F-13, supplemental draft EIS) show the Total Earnings by alternative and the Estimated Ad Valorem Tax Revenues from JMH. The amounts differ by only a few thousand dollars. The Statement of Adverse Energy Impact is issued only when an action is denied.

Comment:

Table 4-8 shows that, under the Preferred Alternative, so-called "sensitive resources" would be subject both to no surface occupancy stipulations and to controlled surface use stipulations.

There is no way for a reviewer of the draft EIS to know what "sensitive resources" are and which kind of stipulation would be applied to them. Page 2-66 contains the statement that "crucial habitats and other areas of sensitive or important resource values" would be open to consideration for multiple use activities under the Preferred Alternative. Map 50 purports to show the location of no surface use and controlled surface use stipulations but the legend on that map does not include any reference to "sensitive resources."

Response:

"Sensitive resources" were mistakenly not included on Map 50, Surface Disturbance and Seasonal Limitations of the supplemental draft EIS. This has been corrected in the final EIS. The sensitive resources subject to lease stipulations and mitigation measures for each alternative are listed in Table 4-8 and shown on Map 50. Some sensitive resource areas are small parcels scattered throughout the planning area that do not have respective names, and are therefore identified as "sensitive resources." These areas are shown on Map 50.

Sensitive resources and their use in making leasing decisions are discussed in Section 2.7.6.1 of the final EIS. Furthermore, a definition of "sensitive resources" has been added to the Glossary of the final EIS.

Comment Number: 100,443

Comment:

Another aspect of management that concerns me is the bonding and performance standards that the BLM will employ concerning leases, exploration and other invasive activities. Hopefully they will be large enough and held for a sufficient length of time that any adverse effects can be diagnosed and corrected by the private developer. Particularly worrisome to me is the issue of road building. I believe that the developers must be held 100% accountable for new roads they construct, and for any ghost roads or two tracks that their workers or anyone else creates off of these access roads.

Response:

Each bond is reviewed for adequacy with every application for permit to drill and remains in effect from initiation to abandonment of the well. The bond amount can be raised if necessary. Operators are 100-percent accountable for new roads that they construct.

Comment Number: 100,452

Comment:

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS).

One concern I have is in regard to the assessment of the environmental impact of oil and gas exploration. The Red Desert, for instance, is well known for having well defined and long-lived inversions in the winter, which trap pollutants. If coalbed methane is being drilled, water will be involved. That water, when it is released at the surface, it is not going to go anywhere. It is a closed basin and there is obvious concern about the input of minerals to the surface. What will it do to the ecology? I would press for a thorough and scientific environmental impact assessment involving all aspects of the exploration before it is even being considered at the exploratory level.

Response:

Natural gas production from conventional and unconventional formations will follow all state and federal requirements. The Colorado River Salinity Compact does not allow for surface discharge of produced water. Produced water will be injected into the subsurface in accordance with state and federal requirements. If a coalbed natural gas project were to happen in the JMH CAP planning area, a site-specific environmental assessment (EA) would be prepared before any drilling activity.

Comment Number: 100,455

Comment:

CBM production has all the roads, compressors, pipe and powerlines, and other infrastructure associated with oil and gas development. However, it also adds new and significantly unique impacts due to the dewatering process. In the PRB, for example, wells will deplete approximately 15,000 gallons per day from underground aquifers (coal seams) to allow the methane to vent to the surface. The dewatering process brings additional air quality concerns due to increased power needs as each well requires a submersible pump; increased power needs also lead to more powerlines and noisy generators. Moreover, the handling of the water brings a whole set of unique impacts - typically, the water is disposed of onto the ground untreated - either directly into an ephemeral or perennial stream or into an excavated, unlined surface pit designed to bleed into the water table. The water has total dissolved solids (TDS) and a sodium adsorption (SAR) ratio that make surface disposal of the water problematic for soils, vegetation and aquatic life. The mere quantity alone poses significant issues for soil loss, erosion and stream cut-banks. In short, the impacts are potentially severe and possibly on a scale that dwarfs conventional oil and gas plays.

Response:

The coal seams in the area are much deeper than in the PRB, and the water quality will likely be very low. The Colorado River Salinity Compact does not allow for surface discharge of produced water. Produced water will be reinjected into the subsurface in accordance with state and federal requirements.

Comment:

Given this potential for development and severe impacts, particularly in light of the local, regional and national attention over western and Wyoming CBM development, one would hope for a land use plan amendment for the JMH CAP that aggressively addressed the likelihood of CBM development and the range and nature of impacts. To our disappointment, however, the supplemental draft EIS is woefully inadequate in its treatment of CBM.

Response:

Impacts resulting from potential CBM development on water resources are discussed in Section 4.4.2 of the supplemental draft EIS. If a CBM project were to occur in the JMH CAP planning area, a site-specific EA would be prepared before drilling activity.

Comment:

First, BLM has failed the basic mandates of supplemental program guidance (Handbook 1624-1) on providing the reasonable foreseeable development scenario for CBM development.

At page 4-69, BLM provides the analyzed RFD for CBM - up to 50 wells by 2020. BLM then speculates that although there is CBM potential throughout the JMH (see Map 70), the 50 wells will occur in two PODs of 25 wells each. At page A13-13, Barlow and Haun predict up to 50 BCF of CBM in the Rock Springs formation. However, each CBM well can extract approximately 0.4 BCF of gas during its life (PRB draft EIS at 4-272, errata). This would mean 50 BCF would result in 125 CBM wells, not 50.

Response:

The BLM has followed supplemental program guidance by conducting and documenting the analyses of factors, and documenting and displaying determinations. Barlow and Haun predict the amount of total coalbed gas resource that may be present in the JMH CAP planning area. The BLM analysis only

projects the number of wells that could be drilled over the 20-year period being studied, not the number that may ultimately be needed to completely develop the resource.

At present, there is no data from JMH to indicate what amount of coalbed gas may be produced from an average well. Coals are known to be thin and discontinuous in the JMH CAP planning area and economic production would probably require completions in multiple coal beds. These coals are not comparable to the very thick and more continuous coals of the Powder River Basin, thus it is not appropriate to equate production in the Powder River Basin to potential production in the JMH CAP planning area.

Comment:

More problematic for BLM on this most basic land use planning question of reasonably foreseeable development, the Wyoming State Geological Survey (WSGS) (supplemental draft EIS at p. A13-13) predicts up to 543 CBM wells and 2 TCF of recoverable CBM. In fact, BLM admits at A13-28 that it has made no effort to try and incorporate the WSGS information on CBM into its RFD analysis. BLM also ignores that at 0.4 BCF per well, 2 TCF could yield as many as 5,000 wells needed to capture the gas. In essence, BLM's few words on these issues make it clear that the very basic questions of how much CBM is there and how many wells may be drilled in the JMH have not been answered in the slightest.

Response:

The WSGS predicts the amount of total coalbed gas resource that may be present in the JMH CAP planning area and the total number of wells that may need to be drilled to develop that resource. The BLM analysis only projects the number of wells that could be drilled over the 20-year period being studied, not the number that may ultimately be needed to completely develop the resource. The BLM has referred to the WSGS information on coalbed gas at numerous places in the supplemental draft EIS. In fact, the BLM refers to its information on coalbed gas at two places on page A13-28. BLM does not agree that it has made no effort to try and incorporate its information.

Comment:

Equally troubling is that BLM hasn't bothered to provide any details about the impacts of whatever CBM development may occur. First and foremost, BLM has failed to provide any information about likely areas where wells may be drilled. BLM also fails to mention which of the "phased in" existing leases and newly sold leases will have the most CBM potential. In sum, BLM didn't take any look, let alone a hard look, at likely CBM plays in the JMH CAP planning area. This is important as CBM impacts will vary significantly by the area - including the coal aquifers targeted, differing water volumes and quantity by formation, soil type, surface resources present (e.g., wildlife, cultural, surface water), impacts to near-surface aquifers and the ability of underground aquifers to receive injected water. On this point, BLM knows that injection of CBM water is troublesome in some areas of the Powder River Basin, yet it assumes, without any testing or data, that high volumes of CBM water can be readily injected in the JMH.

Response:

Map A13-4 on page A13-39 shows the coalbed natural gas potential on the JMH CAP planning area. The BLM cannot say where the likely areas of development will be because there has been little drilling or testing in the area. The JMH CAP planning area differs greatly from the Powder River Basin in many ways especially geologically. BLM does not make any assumptions because all the variables will "vary significantly by the area."

Comment:

BLM also failed to:

- Analyze how will CBM produced water affect the Colorado River Salinity Control Forum management objectives (supplemental draft EIS at p. 2-9).
- Provide any baseline data on seeps, springs and underground aquifers that will be affected by CBM development (supplemental draft EIS at pp. 3-4, 5).
- Provide any baseline data on water volumes, EC/SAR of produced water areas with steep slopes, alkaline soils, soils that drain poorly and existing vegetation community types. BLM failed to follow H-1624 and determine whether CBM and its impacts are suitable for all unleased areas.
- Acquire any additional information on CBM quantity by formation other than 120 to 140 barrels per day (Rock springs formation) and 21 to 48 barrels per day (Almond Coal tests).
- BLM obtained no data on the big play in the Ft. Union that WSGS estimates at over 2 TCF (supplemental draft EIS at p. A13-31).
- Analyze the impacts of surface discharge of water. BLM states in Ch. 4 that CBM produced water will be injected, but buried in Appendix A BLM admits that it may allow surface discharge (supplemental draft EIS at p. A13-31).
- Analyze all of the abandoned oil and gas wells in the JMH CAP planning area for casing integrity and potential harm to aquifers. BLM also failed to analyze any of the impacts of methane migration for any shallow CBM plays. (supplemental draft EIS at Map A13-3).

Response:

Once drilling activity in the area commences, it will give us water quality and volume information, which will provide information for analysis at that time.

It would be extremely difficult to do a casing integrity test on a well that is filled with cement plugs, which is the case with abandoned oil and gas wells. Part of the permitting process is to protect the freshwater zones with casing and cement.

Comment:

BLM claims as an excuse for ignoring one area of impacts (supplemental draft EIS at p. 4-122) that "Expected water production rates associated with CBM cannot be predicted for the planning area." This statement reflects BLM's unwillingness to take even the slightest effort to gain readily accessible information at its fingertips. First, there are four CBM wells within the JMH CAP planning area, and BLM took absolutely no data from them. Second, there are several CBM wells immediately south of the planning area (near Table Mountain) and several more being developed by Kennedy Oil just east of the planning area. For example, a quick review of the Wyoming Oil and Gas Conservation Commission website reveals numerous permitted and producing wells immediately outside the JMH CAP planning area, including:

- 11 CBM wells permitted in T 25 N R 98 W;
- 10 in T 24 N, R 98 W;
- 11 in T 23 N, R 97 W;
- 18 in T 23 N, R 102 W; and
- 7 in T 22 N, R 102 W.

The fact that BLM didn't even bother to mention these wells in the supplemental draft EIS, or gather records and data from the permits about drilling depths and targeted formations, or obtain information on water quantity and quality from wells that have produced, is hard to fathom. BLM also ignored readily

available information from the Wyoming State Geological Survey, reporting that the Fort Union formation coal beds are targeted for exploration in the north central Great Divide Basin, the Mesa Verde formation is targeted in the Atlantic Rim area, a pilot project has been developed for the Fort Union formation in the northeastern Great Divide Basin and an exploration program has been developed for CBM in the Almond formation in the southeastern flank of the Rock Springs uplift. Wyoming GeoNotes, Number 76 at pp. 17-18 (April 2003). Moreover, WSGS provides additional information on the Kennedy Oil CBM project near the JMH CAP planning area that BLM could have incorporated into both its CBM RFD and environmental impact analysis.

Perhaps the most troublesome aspect of the supplemental draft EIS providing little or no information on CBM potential and impacts in the JMH CAP planning area is that the agency is on notice from the judges at the Department of Interior Board of Land Appeals that all leases sold that could lead to CBM development will be void with this type of pre-leasing analysis in the RMP. See generally Wyoming Outdoor Council, 156 IBLA 347 (2002) (Buffalo RMP and CBM); Wyoming Outdoor Council, 157 IBLA 259 (2002) (on reconsideration); Wyoming Outdoor Council, 158 IBLA 384 (2003) (Great Divide RMP and CBM). Given this precedent, and BLM's acknowledgment of its RMPs inadequacies for CBM leasing and development in the past several years, completing another RMP and having the same deficiencies is excusable. Pursuant to the above cases, therefore, BLM is left with only one choice: no oil and gas lease may be sold in the JMH CAP planning area until a thorough and proper pre-leasing study is completed.

Response:

The BLM reviewed all the wells drilled in and around the planning area (please refer to page A13-10). The Green River RMP analyzed for CBNG development.

Comment:

For all existing leases, BLM has failed in this document to study any of the likely impacts and locations of CBM development. For example, BLM at Page 4-122 states that each CBM POD is expected to have 16 dewatering wells and 9 gas wells, meaning they are separated. This departs from all previous technology involving dewatering, where each CBM well serves as both gas and a water well. Has BLM studied or analyzed the impacts of this apparently new drilling technology? Further, all produced water is assumed by BLM to be injected back underground due to salinity issues. However, BLM admits that it may allow surface discharge of CBM water, and BLM has provided no information on EC/SAR values or the rates per well of volumes of produced water. BLM has provided no information on the practice of hydraulic fracturing - the fluids used, the targeted formations, and possible contaminations to underground drinking water supplies. With no information on impacts, mitigation, likely plays and location - this planning effort should not allow any CBM on new or old leases until it acquires the necessary information on which to develop these impact analyses. Otherwise, BLM would be authorizing CBM development, and the impacts stemming from this will not conform to the amended land use plan. BLM will need a second supplemental draft EIS to obtain and analyze information on CBM that it failed to do this time around. This position is supported by the supplemental draft EIS statement that no resource use will be allowed until it can be established that no irreversible effects may occur (supplemental draft EIS at pp. 2-66, 67).

Response:

BLM does not agree that it has failed to study potential coalbed gas impacts and locations of development. Impacts resulting from potential CBNG development on water resources are discussed in Section 4.4.2 of the supplemental draft EIS. If a CBNG project were to occur in the JMH CAP planning area, a site-specific EA would be prepared before drilling activity. Natural gas production from conventional and unconventional formations will follow all state and federal requirements. The Colorado

River Salinity Compact does not allow for surface discharge of produced water. Produced water will be reinjected into the subsurface in accordance with state and federal requirements.

As discussed in Appendix 13, "Impacts of Development Activities," the area is in a very early stage of coalbed gas exploration. There is no information available in the immediate area to determine what well productivity and success rates may be. To ensure that potential short- and long-term impacts to drilling 50 exploratory wells are addressed, all wells were assumed to be productive. This allows us to determine the maximum negative impact on other resources that drilling and producing these wells would cause.

Information shows that the area has potential for a coalbed gas resource, although past efforts have been unsuccessful at finding economic amounts of gas. In addition, industry has not proposed anything more than an interest in continuing to explore for this resource. As stated in the draft EIS "any action subsequent to an initial phase of exploration is so speculative as to preclude reasonable analysis at this time." That analysis does allow for a significant amount of exploratory drilling (i.e., 50 wells). Map A13-4 shows areas of future potential for continued exploratory and development activity. Any prediction of actual POD locations would be so speculative as to not be reasonable.

The coalbed gas exploratory proposal does not depart from technology involving dewatering. The subject discussion in the final EIS will be modified to clarify this issue.

The discussion of water associated with coalbed gas development was discussed in Appendix 13 "Coalbed Methane Water-Gathering System and Discharge Facilities." That section indicates coalbed water produced to date has not been of a quality that would allow for surface disposal. It goes on to say that if better quality water were to be discovered "discharge would only be allowed at point sources that have been approved through NPDES and BLM permitting procedures, including Wyoming DEQ basin water quality limits." Because no surface disposable coalbed water has been encountered, no water quality data can be provided. Water production rates for the few coalbed gas tests in the area are presented in Appendix 13, "Coalbed Methane Water-Gathering System and Discharge Facilities."

The Bureau has not provided data regarding the practice of hydraulic fracturing of wells. Hydraulic fracturing of wells is a widespread and standard practice throughout the Greater Green River Basin, with no indications that it is a possible concern with respect to underground fresh water. In any case, Bureau regulations require that freshwater be isolated and protected from contamination by producing zones where the hydraulic fracturing would take place.

Comment:

Unfortunately, BLM failed in its responsibility to develop an RFD. In fact, the agency basically listed a few studies for the area and then guessed at the number of reasonably foreseeable oil and gas wells. At page A13-12, BLM cites the ARI 2001 report for 3.3 TCF of undiscovered gas resources in JMH that are available for exploration and development. At page A13-13, BLM cites Barlow and Haun for 2.1 TCF, which includes up to 50 BCF of CBM in the Rock Springs formation. With the average deep well recovering 2.3 BCF of gas, this projection means up to 891 producing wells will be in the JMH. BLM then lists a checkerboard study at page A13-13 indicating from 897 to 1,077 wells (not including CBM). BLM then notes that WSGS estimates that 1.255 TCF of deep gas are recoverable and 2.05 TCF of CBM are recoverable in addition to 535,000 barrels of oil. WSGS concludes that 322 conventional and 543 CBM wells are reasonably foreseeable by 2020, the life of the plan.

How did BLM reconcile all of these figures, which seem to all agree on roughly 800 to 1,000 oil and gas wells in the JMH by 2020? In short, it didn't. Instead, BLM's Preferred Alternative has an RFD based upon the historical average of 46 wells drilled every five years to conclude that over a 20-year planning period, there will be 205 total oil and gas wells. This is an incredibly arbitrary RFD. Not only does it

ignore the many sources of information to be relied upon as stated in H-1624, but it also overlooks newer information, drilling technologies and increasing national demand, CBM interest and infill potential. BLM's RFD is so arbitrary that it is in part based on assuming there to be an average density of one well every four sections, or every 2,560 acres (supplemental draft EIS at A13-23). However, BLM states elsewhere in the supplemental draft EIS that spacing will be one well per section, or every 640 acres. This creates another problem: at page 4-121 BLM provides data on a producing field, the Nitchie Gulch, that has down spaced to 160 acre spacing. BLM's RFD section, therefore, is nothing more than a set of guesses on density assumptions (that also conflict with each other), and it ignores real production data it lists in other parts of the supplemental draft EIS. In fact, what BLM has done here is not properly assess and then analyze the impacts of an RFD; rather, it has looked backward to give us a historical development scenario, not one for the future. On this point, however, the RFD is the RFD, and should BLM choose the Preferred Alternative, once 205 wells are permitted for all mineral estates in the JMH, all oil and gas leasing and new permitting must stop until 2020 - the life of the plan. At that time, BLM could initiate another plan amendment should industry express interest in a 206th well.

Response:

BLM does not agree that it failed in preparing a Reasonable Foreseeable Development scenario for each alternative. The BLM has described all the known information about the fluid mineral resource in the JMH CAP planning area. Our presentation of information about resource assessments is provided to illustrate the variation in estimates of the number of wells that may be required to completely develop the potential resource. Our analysis only projects the number of wells that could be drilled over the 20-year period being studied, not the number that may ultimately be needed to completely develop the resource.

Predicting the number of potential future exploratory wells is a difficult task. BLM considered all available information on past hydrocarbon development, relevant research on potential for the resource, and industry-supplied information to understand the potential for future activity. The WSGS found potential for eight different types of plays (not counting the coalbed natural gas potential play) in the area. BLM determined that an average density of one well for every four sections would allow industry to obtain enough information to make geologic interpretations needed for outlining potential development targets in the eight plays identified. These assumptions assume that prices for hydrocarbons will be high enough to encourage a high level of interest in exploring this area.

The assumption of an average well density of one well per four sections was used to determine how many wells would be needed to outline potential targets for development over the 20-year study period. The discussion at 4-121 was intended to indicate how closely spaced wells (exploratory and development) could be. The subject discussion at 4-121 was determined to be somewhat confusing; therefore, a more complete discussion of spacing will be included in the final EIS.

Comment:

Another major function of planning for fluid minerals is that the RMP is to identify those portions of the resource area that will be open to leasing under the standard lease terms, open to leasing under seasonal or other controlled surface use restrictions, open to leasing and exploration with a no surface occupancy stipulation or closed to leasing for discretionary or nondiscretionary reasons (H-1624-1 at IV.B). Importantly, BLM is to provide a narrative for the justification for constraints, stipulations, closures, areas open to leasing, etc.

BLM did none of this in the supplemental draft EIS. Table 4-3 merely states that 142,630 acres are closed to leasing and 434,210 acres are open to leasing for the Preferred alternative. Table 4-8 provides that 79,480 acres are to be leased NSO, 257,420 acres with CSU and 297,920 acres with seasonal limitations. Appendix 17 is no better. The "preliminary" adaptive management strategy provides no

information about why areas were closed and others opened to new leasing and why, and in what areas, seasonal and other CSU stipulations would be imposed.

Further, BLM provides no justification of why certain areas get the very strong NSO protection and others are left open to leasing with the standard lease terms and conditions. On this point, Appendix 5 (A5-6) talks about the NSO stipulation, and leaves blank the described lands and the reason why the NSO stipulation would be imposed. In short, BLM has given no justification and no specific information for which areas deserve different levels of protective stipulations.

Response:

Table 2-2, which begins on Page 2-164 of the supplemental draft EIS, provides information regarding areas of fluid mineral lease conditional requirements.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

The EIS provides the narrative for applying various stipulations through the alternative formulation process and the range or alternatives described in the EIS. The impact analysis provides the rationale for providing the various levels of stipulations described in the alternatives. Table 2-2 summaries the areas open or closed to leasing and the lease stipulations by alternative. Please see the updated table 2-2 in the final EIS.

Comment:

BLM, in every alternative, has spoken a half-truth about areas it "closed" to new leasing.

The preferred alternative makes it sound like BLM has gone out of its way to make 142,630 acres unavailable for leasing. What BLM doesn't tell the reader is that it cannot legally lease 116,305 of those acres as they are in WSAs (supplemental draft EIS at p. 3-48). So in effect, BLM has discretionarily closed only 26,000 or so acres in the 575,000 acre planning area, or less than 5% of the planning area. In addition, Table 4-8 really tells the reader upon close examination of the preferred and no action alternatives, that BLM is proposing only 11,000 acres of new NSO leases, 40,000 acres of additional CSU leases and roughly the same (actually less) leases with seasonal (or timing) limitations. BLM should be more upfront with the public about the true acreage of lands it is choosing to protect from oil and gas leasing and production.

Response:

WSAs are nondiscretionary closure areas that are closed to new leasing by Congress and not available for BLM to consider for leasing through its land use planning process. Thus, they are presented in Table 4-3 of the supplemental draft EIS and discussed in Chapter 3 of the supplemental draft EIS.

WSAs were not included in the acreage totals in Table 2-2 because Chapter 2 represents discretionary BLM management actions only. The acreage values were organized in this manner to differentiate between areas that are closed to leasing regardless of discretion and areas for which BLM is making management decisions. WSAs were not included in the acreage totals on Table 4-8 because WSAs are managed under the Interim Management Policy, which includes some flexibility regarding surface disturbance in WSAs.

Map 54 and Table 4-3 show the areas closed to leasing under this alternative.

Comment:

Another major problem with this planning effort is that BLM recycles the standard stipulations for CSU and seasonal restrictions from the 1997 Green River RMP and prior management, without bothering to study whether they have been or are effective. See supplemental draft EIS at p. 4-173; Table 4-8; Appendix 6. BLM has not followed H-1624-1 and developed stipulations (as opposed to merely recycling ones from a decade ago) to adequately protect resources. BLM assumes that previous stipulations will be adequate to protect other resource values, but where is the analysis and scientific data that proves these stipulations to be effective? For example, the CSU stipulations of ¼-mile buffer for sage-grouse leks and a 500-foot buffer on floodplains and wetlands may no longer be valid in light of changing conditions and new scientific studies on the subjects. See, e.g., Northwest Indian Cemetery Protective Association v. Peterson, 764 F.2d 581, 588 (9th Cir. 1985), revd on other grounds 485 U.S. 439 (1988) (where the court determined that NEPA requires agencies to "analyze the mitigation measures in detail and explain how effective the measure would be...a mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA"). In short, BLM has failed to test whether any of these mitigation measures (in the form of lease stipulations) will actually be effective. Another problem is that most of these stipulations are only in place for drilling, which, given the 26-year lifespan of a well, is a very short time frame. BLM has completely failed to address that these stipulations in many respects do not cover year-round noise and human presence for the full production and reclamation phases of these wells.

Further, at page 4-64, BLM admits that stipulations on existing leases may not provide specific mitigation measures to protect wildlife; it then states that post-leasing mitigation measures may provide economic hardship to lessees.

BLM has failed to analyze what works, what doesn't and what hasn't been tried yet, in addition to the costs and technological feasibility of different types of mitigation measures, including reclamation. In essence, BLM has narrowly focused on the stipulation protections that attach to leases and has ignored two key factors: that these protections are usually only for the drilling cycle and more importantly, that BLM has a great deal of authority in FLPMA and the MLA to impose post-leasing mitigation measures as conditions of approval in project level and APD level NEPA studies.

Response:

Appendixes 5 and 6 offer standard BLM guidelines for mitigation of surface disturbing activities to various resources and are not intended as a list of mitigation measures. These guidelines have been developed through various BLM planning efforts and are continually modified as additional information is obtained on the adequacy of each guideline. Specific mitigation measures are built into the management actions of each alternative and provide a range of management. Mitigation actions are then analyzed in Chapter 4 of the supplemental draft EIS to determine the adequacy of mitigation proposed in each alternative. As part of the implementation strategy described in Appendix 17 of the Proposed JMH CAP, BLM provides a mechanism to determine the effectiveness of mitigation and adjust management accordingly.

Comment:

Appendix 4 demonstrates that many of the perceived protections provided by stipulations are illusory: BLM makes it a practice to waive or except many of the stipulations that are in place on these leases. There are generally two problems here. First, the binding regulations speak only to the practice of "waiver" of a stipulation, which typically includes a period of public comment and review. See 43 C.F.R. § 3101.1-4.

Response:

43 CFR 3101.1-4 states "If the authorized officer has determined, prior to lease issuance, that a stipulation involves an issue of major concern to the public, modification or waiver of the stipulation shall be subject to public review for at least a 30-day period."

Comment:

In short, when there is a stipulation that is part of the lease/contract signed with an operator, the only mechanisms for changing it are waivers and modifications. BLM has thus created the legal fiction of "exception" to a stipulation, which does not exist in the regulations. To the extent BLM's leasing handbooks and manuals provide for "exceptions" they are illegal as outside the scope of the authority provided in the binding regulation. Second, the stipulations are in place due to long-term studies about wildlife avoidance of and impacts from certain aspects of oil and gas drilling and production. A snapshot determination of "there are no mule deer near the proposed well pad today" to grant a 2 or 3 week exception to winter drilling is scientifically unsupportable. Not until there are long-term studies on the issues that led to the stipulations in the first place should exceptions be so easily and readily granted per the terms in Appendix 4.

Response:

43 CFR 3101.1-4 gives the BLM the authority to grant "exceptions."

Comment:

BLM then confuses matters at page 1-3, by stating this land use planning document is also "making decisions at . . . the activity planning tiers of the planning process due to the mineral development decisions that were deferred at the RMP level and the site-specific management decisions for all other resource and land uses in the CAP area." We agree that if this amendment is to serve as a preleasing document for oil and gas, BLM should acquire all of the site-specific information it can on resources, steep slopes, cultural and historical places, etc. before making a leasing determination. However, this statement appears to be directed at post-leasing authorizations, and therefore is seemingly taking away the project level analysis that comes after leasing but before APD approvals for a new field. We would like clarification from BLM on these points.

Response:

Areas are reviewed before leasing and again before surface-disturbing activities commence. This ensures complete assessment of the resource values present in a given area.

Comment:

Leasing and Development on Split-Estates: At page 1-10, BLM states there are 5,000 acres of split-estate lands (private surface above federal mineral) in the planning area. However, BLM failed to acquire and provide information regarding how it will contact landowners prior to leasing out federal minerals below their private property. For the acres in question, why would BLM not bother establishing a system within the RMP to send a certified letter to the affected landowner a month prior to the sale? The burden here is minimal and the benefits are tremendous. First and foremost, this would allow these landowners and ranchers to bid on their minerals and if successful at the auction, have a say in how the mineral estate below them, affecting their private surface estate, is developed. To lease out federal minerals underneath private surface without proper notice and the opportunity for these landowners to participate in the NEPA and sale process is a gross mismanagement of public lands. This results in a direct violation of 40 C.F.R. § 1506.6(b)(3)(viii), which requires "direct mailing" of the EA and sale proposal to "affected

landowners." Also at issue, is whether split-estate owners constitutional right of due process is violated by not notifying them of the sale of federal minerals beneath their private property.

Response:

In accordance with the terms and conditions of the patent that severed the surface estate from the mineral estate, the United States reserved the right to dispose of the minerals in accordance with the mineral land laws in force at the time of such disposal. Any person who has acquired from the United States the right to develop the mineral deposit, has the right to remove the minerals and occupy so much of the surface as may be required for all purposes reasonably incident to the development of the minerals. Such is the case in an approved APD.

Issuance of the lease itself, however, is a paper transaction; Section 226(g) of the Mineral Leasing Act provides that a lessee cannot engage in any surface-disturbing activities before the analysis and approval of an APD after environmental and technical reviews. Therefore, a surface owner's interest and use of the surface will not be impaired until the conclusion of these reviews.

During land use planning, BLM regulations require that the public shall be provided opportunities to meaningfully participate in and comment on the preparation of plans, amendments and related guidance. Further, public involvement in the resource management planning process must also conform to the requirements of NEPA (43 CFR 1610.2(a)). Every member of the public is invited to participate in the development of BLM land use plans and associated environmental documents.

After land use planning has determined areas where oil and gas leasing is acceptable, parcels can then be nominated for sale by interested publics. The Federal Onshore Oil and Gas Leasing Reform Act requires that BLM post a copy of applicable lease sale notices at the field office having jurisdiction over the included lands, for at least 45 days before conducting a competitive auction.

After leasing, but before submitting a proposal for surface-disturbing activities, the mineral lessee is required to contact the surface owner and either (1) secure written consent or a waiver from the surface owner in the form of a surface owner agreement, or (2) provide payment for crops and tangible improvements, or (3) provide a bond for the benefit of the surface owner to obtain payment for damages to crops and tangible improvements.

Notice of an APD must be posted in the local BLM office for 30 days before approval. An APD cannot be considered complete or approved without proof of one of the three requirements listed above. In this manner the surface owner is always invited to participate in development of the surface-use plan and reclamation or stipulations or conditions of approval. Although the BLM is not required by NEPA to involve the public during preparation of an EA, particularly when the proposed activity is in conformance with the current land use plan (H-1790-1, NEPA Handbook, Chapter IV.4.A, Preparing Environmental Assessments), it is the policy of the Rock Springs Field Office to make available a NEPA log on the BLM Wyoming Web site, describing current actions under consideration in the field office area.

For larger oil and gas projects involving multiple wells and facility development, the public would be notified through scoping notices and by local media. Public comment on environmental analyses would be conducted using the procedures for public involvement found in the Council on Environmental Quality (CEQ) regulations (40 CFR 1500) and BLM Handbook H-1790-1.

As indicated above, the mineral lessee has a statutory right to develop the mineral estate. BLM recognizes that the surface owner also has certain rights and the BLM will not approve surface-disturbing activities before ensuring the surface owner's rights are taken into consideration.

Comment:

Page A13-8, Well Depths: Please expand the discussion on well depths. Given that 62% of the wells drilled in the area are at depths less than 10,000 feet, what percent of undiscovered gas plays are at depths less than 10,000 feet? How does the depth of discovered resources and producing wells compare to the depths of undiscovered resources? Please examine the relationship between producing wells and drilling success with well depth. Are shallow wells more likely to be successful? Do deeper wells have lower success rates? Please analyze and discuss these relationships in the context of estimated success when drilling undiscovered resources.

Page A13-9: "Wells must be drilled deeper outside the Nitchie Gulch field to reach the same target formations (Frontier and Dakota)." Given that deeper wells cost more, please discuss and analyze the additional costs and economic constraints associated with drilling deeper wells outside the Nitchie Gulch field.

Page A13-9, Table A13-2, Drilling rates and success percentages: Please analyze and graph the relationship between depth of resource and success. Please complete this analysis for each time period in the table. Also, please discuss and analyze separately the success rates for exploration wells and development wells. Please complete the analysis of success rates for exploration wells and development wells for each time period in Table A13-2.

Response:

These analyses are not critical in the decisions being made in the supplemental draft EIS.

Comment:

Page A13-12. "The comment letter from Barlow and Haun, Inc. (1998), was used as the most up-to-date reference for JMH plays and their potential gas resources." Please justify why these data included in a comment letter are more scientifically credible than USGS data rigorously developed by a team of government scientists. Was the data from Barlow and Haun peer reviewed? Please discuss the economic assumptions, parameters, costs, and market conditions assumed and used in the Barlow and Haun estimate of gas potential. What prices and costs were used to estimate the potential gas resources? Please compare and contrast in a table the estimates of economically recoverable gas resources from Barlow and Haun, the USGS and WYGS. Why are the estimates different? How do the economic assumptions and parameters used in each study differ?

Response:

At the time of printing, the Barlow and Haun information was the most recent that specifically addressed JMH plays and their potential resource. Since then, the USGS has made updated resource assessment data available on its Web site that can be prorated to estimate the resource in the JMH. This new information will be included in the final EIS.

Comment:

Please consider the results from the 2002 report from RAND by LaTourrette et al. that estimated gas resources in the Green River area. This report is more current that the Barlow and Haun report and should be included in the analysis. Page A13-16: "...the average well would produce 2.3 bcf of gas..." Please analyze and display the variance that goes with this average. Please take a hard look and analyze and discuss the statistical accuracy of this estimate. Is the average recovery rate a statistically accurate estimate? What is the variance and standard deviation of the average? Does the estimate pass a simple t-test or is the standard deviation too high?

Response:

BLM cannot break out that part of the Rand report that would provide a resource estimate for just the JMH CAP planning area. Please see our response to your previous comment for more on this subject. Additional analysis of average well production does not appear to be appropriate. It was computed only as a means of getting a fair general estimate of well production.

Comment:

Table A13.4: Analysis of the WYGS data included in this table indicates that production rates for recoverable resources vary from 0.28 bcf/well for the Lewis Shale Turbidites play, to 8.87 bcf/well for the overpressured low permeability wells in Mesa Verde sandstone play. This indicates significant variation in production rates depending on the geologic play and targeted formation. What is the justification for estimating an average production rate for all plays and all formation? Please estimate, analyze, display, and discuss the production rates for undiscovered resources on a play-by-play basis and on a formation-by-formation basis.

Response:

Not enough data are available to make projections of the number of wells that could be drilled in each play type, or their production rates as you request. BLM was able to make a reasonable estimate of the total number of wells to be drilled over the 20-year period and a reasonable estimate of average well production. This information was used to estimate future mineral royalties and taxes for each alternative. BLM was also able to use these estimates to make a comparative analysis of impacts between each alternative.

Comment:

Page A13-16: "there is significant variation in total production and well life..." Please expand the analysis and discussion to account for such variation in production and well life. What are the characteristics of producing wells? How do the characteristics compare to nonproducing wells?

Response:

The scope of the EIS is to assess the existing production. Conducting an extensive reservoir analysis is not part of the process.

Comment:

Please take a hard look at projected success rates for exploratory wells and development wells.

Response:

Such analysis occurred when the RFD was prepared.

Comment:

Page A13-19, Table A13-5: To improve the information content of the supplemental draft EIS, please add the depth of each well drilled to this table. Such information is useful for understanding estimated success rates based on the characteristics of past success rates.

Response:

This information is publicly available.

Comment Number: 100,456

Comment:

The geologic constraints that limit development activities include:

- Sensitive soils (e.g., erosive, hydric, cryptogamic)
- Badlands
- Floodplains
- Steep, unstable, or potentially mass wasting slopes
- Landslide areas (areas below unstable or mass wasting slopes)
- Dune fields and windblown sand areas
- Chemical emissions (e.g., hydrogen sulfide) from well development
- Faults and earthquake potential

These and other sensitive or problematic geological areas must be avoided in any responsible management plan. This is particularly important because the Jack Morrow Hills area is subject to strong summer thunderstorms that cause intense runoff (draft EIS, page 234). Unfortunately, the JMH draft EIS (page 226) mentions that highly erosive red soils occur in the area, but does not disclose their locations or evaluate how these soils would limit development. Instead, the draft EIS only considers a few kinds of geological "hazards" that may exist in the area (specifically, hydrogen sulfide, earthquake, landslides, and windblown sand). See draft EIS, page 218 and Map 49. This is no sufficient information to make an informed decision about where development should be prohibited and restricted to prevent slope or soil damage.

Response:

Geologic hazards did not include the highly erosive red soils. Before any surface disturbing activity, a site-specific analysis and consideration of the surrounding environment is conducted to determine the appropriateness of development in the area. Factors considered in this analysis and subsequent determination are soil type, erosion potential, rare geologic formations, vegetation presence, and effect to water resources.

Comment Number: 100,459

Comment:

Section 2.1.3.8 of the SDEIS, regarding buy-back of existing valid leases: How about the money the State of Wyoming is going to lose that supports our education system in this state, pays for our kids' education, supports the University of Wyoming, and builds our roads. BLM needs to address this.

Response:

Section 2.1.3.8 states that buy-back or exchange of producing federal leases within the planning area was not analyzed in detail because the current level of oil and gas production as a whole does not cause major conflicts with other resources or resource uses and that it would not be cost effective. However, alternatives analyzed in detail do include consideration of buy-back of nonproducing leases. Figures 17 (F-12, supplemental draft EIS) and 18 (F-13, supplemental draft EIS) show the Total Earnings by alternative and the Estimated Ad Valorem Tax Revenues from JMH. The amounts differ by only a few thousand dollars.

Comment:

Coal development offers the most beneficial, long-term use of this unique area that is not properly addressed in any of the Alternatives.

Response:

Coal resources and development within the planning area is addressed in Chapters 2, 3, and 4 of the supplemental draft EIS.

Comment Number: 200,014

Comment:

Mineral leases in the area should be traded or bought-out. New oil and gas leasing and mining activities should not be allowed.

Response:

Areas have been identified for closure to new leasing under the management alternatives (see Table 4-3 and associated maps, supplemental draft EIS). The buyout option was analyzed in Alternative 2. Buyout or exchange of existing leases from willing sellers may be considered on a case-by-case basis.

Comment Number: 200,201

Comment:

The BLM must follow the President's Executive Order 13212 (2001) in completion of the JMH supplemental draft EIS. In the Executive Order, the President directs federal agencies to evaluate current programs, policies, and rules and to reduce barriers to America's energy self-sufficiency. The supplemental draft EIS should reflect federal law and policy and the nation's need for secure sources of domestic energy. The supplemental draft EIS should acknowledge that industry could develop the resources in an environmentally friendly manner while providing the nation with an abundant source of clean affordable energy. Furthermore, the BLM has a Congressionally mandated multiple-use mission, which must be honored and not compromised by the single-use land management objectives promoted by certain interest groups.

Response:

The BLM is recommending a balanced approach to fulfill the President's Executive order, while simultaneously protecting resource values and other uses and allowing the operators to conduct their activities in identifying new reservoirs.

Comment:

Phased leasing and development reduces the ability of companies to drill exploratory wells within a resource area. If lease sales are limited to set phase areas, effectively the number of leases is severely restricted, which could lead to the smaller independent companies being forced out of an area.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

BLM must not make assumptions that industry can directionally drill in any situation. Increased cost coupled with increased mechanical challenges may prevent directional projects from ever being drilled, and thus related revenues not realized by the State of Wyoming and the country.

Response:

BLM does not impose any drilling or completion methods on operators. It is the operator's decision regarding the types of drilling methodology to be used or how to complete the well. However, to prevent impacts on resource values, abide by restrictions in sensitive areas, and capture the mineral resources from reservoirs, BLM may recommend utilization of directional drilling.

Comment Number: 200,209

Comment:

The supplemental draft EIS does not provide any specifics regarding the scope and nature of seismic testing. Options for such testing were mentioned, and brief descriptions of the various methods provided. But the critical information about the timing, locations, and spacing of seismic grids were not even mentioned. This is a major shortcoming in the supplemental draft EIS, and makes interpretation of the possible effects of such exploration impossible. This is particularly important when it comes to 3-D) seismic testing. 3-D is a wonderful tool for outlining hydrocarbon prospects. It is also a potentially very disruptive tool to wildlife and their habitats. Without knowing exactly how and when 3-D grids will be run, the impacts cannot be projected. In some places, impacts of even 3-D testing can be ameliorated with fairly simple measures. For example, on Alaska's north slope, 3-D seismic can be conducted only in late winter and spring. At that time, the only wildlife species that is likely to be affected are polar bears occupying their maternal dens. Because we have explicitly identified denning habitats and the chronology of denning, it is possible to effectively eliminate effects of 3-D by requiring that surveys in areas, including denning habitats, be conducted later in the spring after females and their cubs have emerged. The supplemental draft EIS offers no indications as to how these surveys would be managed in the complex mosaic of the JMH, and hence no opportunity for reviewers to interpret what is in store for the landscape or to make sensible comments.

Response:

It is not in BLM's interest to dictate what seismic methodology should be used in the area. However, a mitigation plan should be submitted to the BLM to be evaluated on a case-by-case basis.

Comment Number: 200,212

Comment:

The concept of staged leasing continues to be present in this planning effort despite previous industry comments. This concept is unnecessary, is not supported by analysis, and should be removed. Staged leasing prevents the operator from securing a viable lease block prior to development and incorrectly presumes resource degradation as a result of leasing.

BLM must ensure that valid, existing rights are not abrogated by the supplemental draft, which they appear to be by the staged leasing proposal.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 200,223

Comment:

BLM indicates that complete reclamation will be required on disturbed areas prior to issuing new leases, lifting suspensions on existing leases, or allowing development to occur in other areas. The requirement of full reclamation before allowing new activity to occur is unreasonable, given the facts that all disturbed areas are subject to reclamation bonds that dictate the terms of reclamation and that the bonds will not be released until satisfactory reclamation is achieved.

Leases in the JMH CAP planning area have been in suspense for years, ostensibly to allow BLM to conduct its planning analysis. It was industry's understanding that these suspensions would be lifted once BLM's management strategy was adopted. It is our contention that lease suspensions are intended for use in rare, extreme situations and not for use in perpetuity. Despite the claims of some people, JMH is hardly rare and it does not warrant extreme measures such as interminable lease suspensions! BLM needs to revise its lease management strategy.

It is irresponsible for BLM to devise a plan that will prevent a lessee from acquiring the lease block required for sufficient development of the resource. Plainly stated, staged leasing will dissuade most companies from devoting their limited exploration capital to an area which may have potential for development when no plans for development can be finalized. Even more irresponsible is for BLM to propose such a plan when there are no specific targets identified which will allow the agency to make reasonable decisions.

Response:

Page G-10 of the supplemental draft EIS defines reclamation as "the reconstruction of disturbed ecosystems to return the land to a condition approximately or equal to that which existed before disturbance or to a stable and productive condition compatible with the land use plan." The goal is to stabilize disturbed areas. Page A6-5 (reclamation) and the reclamation objectives on Page A9-1 of the supplemental draft EIS do not indicate that leasing and development activities should be stopped before full reclamation of disturbed areas occurs. However, in sensitive areas within the planning area, mitigation could be required to protect the resources, if conditions warrant based on site-specific analysis.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. The approach to timing and sequencing of the activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. Field data would be used in impact analysis and in gauging progress toward the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

A-19.15 VISUAL RESOURCES MANAGEMENT

Comment Number: 100,332

Comment:

Page 2-86, Visual Resource Management VRM Class III areas: What is a Red Desert Watershed?

Response:

A detailed discussion of the Red Desert Watershed is included in Section 3.7.4 of the supplemental draft and final EIS.

Comment Number: 100,358

Comment:

The supplemental draft EIS must address the effect road building and energy development will have on viewsheds. How many of the pristine viewsheds will be unmarred for future generations.

Response:

Potential impacts on visual resources resulting from management of other resource programs are discussed in Section 4.9 of the supplemental draft and final EIS.

Comment Number: 100,372

Comment:

It appears that the JMH CAP planning area has a very high potential for development of wind power, and there is not much mention made of that possibility in the supplemental draft EIS. There perhaps needs to be more time spent addressing this issue, as it does relate to viewshed concerns. Some of the best sites for wind farms fall within the Oregon Buttes viewshed, as defined in the draft EIS.

Response:

The potential for development of wind power is discussed in Section 3.5.7.1 of the supplemental draft EIS. Any future development of wind power would be consistent with designated VRM classifications.

Comment Number: 100,373

Comment:

There is an existing infrastructure in the Nitchie Gulch field. Any new roads and pipelines will be of a minimum distance. Our wells are powered by natural gas and do not require the installation of power lines. The viewshed for each well site is quite limited due to rolling hills associated with the dunal terrain. The field, which has been in existence for over forty years, including existing wells, equipment, and roads are a part of the characteristic landscape in this area. Our valid and existing lease rights preceded the VRM classification contained in the RMP. Any imposed mitigation should contemplate these facts.

Response:

BLM recognizes that existing leases and development are in the Nitchie Gulch field. Even though producing wells exist in the eastern portion of the Sand Dunes ACEC, the striking contrast of the dunes with the lands around it warrant a Visual Resource Management (VRM) classification of a Class II. In

addition, when the gas field is exhausted and the associated facilities are removed, the area will return to a natural state. BLM has worked with operators in this area to design activities to limit visual intrusions. As mentioned, BLM has been largely successful as a result of the rolling hills associated with the dunal terrain. BLM will continue every effort to work together to meet the visual management objectives and adequately incorporate visual design considerations into initial planning and design efforts.

Comment Number: 100,376

Comment:

Visual resource management (VRM) classes must be assigned to all public lands as part of the Record of Decision for land use plans. We submit that all areas proposed for wilderness designation, whether citizen-proposed or otherwise, must be designated as VRM I "to preserve the existing character of the landscape" (see BLM Instruction Memorandum 2000-096). Areas within the viewshed of National Trails and WSAs should also be designated as VRM I. Management actions authorized under the JMH CAP should reflect these VRM classifications. For example, withdrawal from the operation of the General Mining Law and/or NSO stipulations may be required to assure compliance in VRM I areas and some VRM II areas. At a minimum, all lands proposed for wilderness designation within the planning area should be managed as ROS class primitive.

The JMH CAP should determine which lands are currently accessible by motor vehicle, horse, or foot for public recreation and which lands are rendered unavailable for public recreation due to private lands that hold no access easements. The JMHCAP should address the problem of inaccessibility of public lands for public recreation, including acquisition of easements and appropriate land exchanges.

Response:

As a result of the recent Utah wilderness settlement, BLM Instruction Memorandum 2000-096 has expired and no new WSAs will be designated within the planning area. However, the VRM classification for all WSAs will be Class I (supplemental draft EIS, page 2-163).

Management actions authorized under the JMH CAP will indeed reflect designated VRM classifications. VRM Class I precludes any intrusion, and VRM Class II allows for intrusion with mitigation.

The "Recreation Resources Management" and "Travel Management, Access, and Realty" sections in Chapter 2 of the supplemental draft EIS discuss access and recreation opportunities for the planning area. All BLM land is accessible for public recreation.

Comment Number: 100,440

Comment:

What is the rationale for requiring no surface occupancy stipulations on oil and gas leases in all Class II VRM areas (supplemental draft EIS, page 2-28), when range improvements or water developments are assumed to produce "only a low level of change to the landscape," (supplemental draft EIS, page 4-145)? How does a straight-line fence or a stock-watering tank differ in visual impacts from a natural gas producing wellhead (the impacts during drilling are only temporary)?

Response:

All BLM-administered land is accessible for public recreation. In accordance with the Green River RMP, VRM Class I precludes any intrusion. Class II allows intrusion with mitigation. Most oil and gas locations in this area are equipped with two 20-foot tanks for holding liquids, a well head, a separator, and

sometimes a dehydrator. This equipment is quite different from the equipment used for a stock-watering tank.

Comment Number: 100,455

Comment:

The VRM Class for citizens proposed wilderness should be VRM Class 1 in all cases. The Joe Hay Rim, Big Empty, and portions of the Oregon Buttes Badlands, Honeycomb Buttes, and Pinnacles have been classified as VRM Class 3 under the supplemental draft EIS; this is clearly unacceptable. Even worse, a portion of the Parnell Creek unit, which has been proposed for wilderness and is in a pristine state, is classified as VRM Class 4 under the supplemental draft EIS. These misclassifications are inexcusable and must be rectified in the final EIS.

Response:

As a result of the recent Utah wilderness settlement, BLM Instruction Memorandum 2000-096 (which assigned WSAs to VRM Class I) has expired, and no new WSAs will be designated within the planning area. However, the VRM classification for all existing WSAs will be Class I (supplemental draft EIS, page 2-163). Therefore, other proposed areas that do not currently have WSA status will be assigned VRM classifications that are consistent with management prescriptions for the area.

Comment Number: 100,456

Comment:

Apart from most Class IV areas, the VRM classifications on our map, which show actual on-the-ground conditions, differ from the BLM's existing and proposed VRM classifications. This is because BLM's VRM classifications are based on what landscape changes the BLM would permit in the area, not on existing on-the-ground visual conditions. For the final EIS, BLM should conduct additional viewshed analyses and perform additional study to identify all potentially important visual and scenic resources in the area.

Response:

The BLM disagrees. Extensive groundwork was conducted during the planning process for the JMH EIS. In addition, computer models were used to assess visibility. Such computer modeling and on the ground data gathering is part of the standard order of business and will continue to be used on a project-specific basis and as part of the monitoring strategy for the planning area (Appendix 17).

A-19.16 SPECIAL MANAGEMENT AREA MANAGEMENT

Comment Number: 18

Comment:

I strongly urge for the protection of the seven areas being studied for wilderness protection to be managed for eventual addition to the wilderness system. Any actions that degrade these areas are not acceptable.

Response:

No changes will be made regarding management of wilderness values in the seven existing WSAs. When Congress makes decisions regarding the WSAs in the planning area, those decisions will be incorporated

into the Green River RMP. Until Congress acts, these WSAs will be managed under the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (USDI 1987).

Comment Number: 100,018

Comment:

We would like protection for the seven Wilderness Study Areas, the National Historic Trails and the Continental Divide Trail to continue.

Response:

No changes will be made regarding management of wilderness values in the seven existing WSAs or their status as WSAs. When Congress makes decisions regarding the WSAs in the planning area, they will be incorporated into the Green River RMP. Until Congress acts, these WSAs will be managed under the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (USDI 1987). Management for the NHTs within the JMH CAP planning area would continue as described in the Green River RMP. The CDT would continue to be managed as a special recreation management area.

Comment Numbers: 100,036; 100,043

Comment:

Roadless areas must be preserved as they presently exist.

Response:

The JMH CAP provides management prescriptions that allow for multiple use and flexibility while protecting unique resources found in the area. In addition, wilderness recommendations for the seven WSAs in the area have been submitted to Congress. All WSAs must be managed to protect their wilderness values until Congressional action is taken.

Comment Number: 100,042

Comment:

Areas such as Honeycomb, Oregon Butte, Pinnacles, Jack Morrow Creek, Rock Cabin, Steamboat, Essex Mountain, Sand Dunes, etc. are special areas which should be saved for the current multiple uses now available, but not destroyed with more roads, well sites, etc.

Response:

Management actions in the Proposed JMH CAP for the final EIS provide for the management of the resource values and continued multiple use in the entire planning area. The Green River RMP provided management decisions to protect the resource values in the Sand Dunes and Oregon Buttes areas, and these areas were designated ACECs in the Management Framework Plan developed in 1981, and reaffirmed in the Green River RMP (1997). The Green River RMP established the objectives for Steamboat Mountain, which was also designated an ACEC in the Green River RMP. Management actions to protect resource values in Honeycomb Buttes, Oregon Buttes, and portions of the Sand Dunes were established in the Wilderness EIS (1987).

Comment Numbers: 100,043; 100,049; 100,057; 100,167; 100,390; 200,014; 200,026; 200,037

Comment:

We ask BLM to expand existing WSAs and designate new WSAs for qualifying areas and where citizens have identified lands that have wilderness characteristics as defined in sec. 603 of the Federal Land Policy and Management Act of 1976.

Response:

Areas submitted by citizens groups for consideration as wilderness were reviewed by the BLM interdisciplinary team. Only one area was determined to have wilderness values. The designation of this area was considered in two alternatives in the supplemental draft EIS. Neither the Preferred Alternative (in the supplemental draft EIS) nor the Proposed JMH CAP (in the final EIS) for managing the JMH CAP planning area recommend new WSAs. Please see the information provided in the updated Appendix 18 of the final EIS.

Since the supplemental draft EIS was issued, a settlement of a lawsuit involving WSAs in Utah has resulted in no further consideration of WSA or wilderness designations on BLM-administered public lands. The 13 WSAs proposed by citizen's groups were closely evaluated to assure that the management prescriptions in the alternatives of the EIS appropriately provided for management of sensitive resources. Please see the updated Appendix 18 in the final EIS.

Comment Number: 100,059

Comment:

I favor buying out or exchanging any mineral leases near wilderness study areas. I believe preserving the visual landscape around locations such as Honeycomb Buttes deserve more protection than do the historic trails of Wyoming.

Response:

By an act of Congress, WSAs are closed to leasing. By nature, leases are constructed of aliquot parts of 40-acre parcels or more. The immediate area surrounding WSAs falls within those aliquot parts and is not leased. Exchanges and buyouts of leases near WSAs could be considered with willing participants if necessary to meet the objectives for the JMH CAP planning area. Various VRM classifications for the planning area were considered in the range of alternatives.

Comment Number: 100,063

Comment:

Preserve the immediate Steamboat Mountain area.

Response:

Management actions to protect the resource values in the Steamboat Mountain area were identified in the Preferred Alternative of the supplemental draft EIS and have been updated in the Proposed JMH CAP in the final EIS with the expansion of the ACEC and Steamboat Mountain Management Area. BLM recognized the sensitive resources in this area in developing the Green River RMP, and identified objectives and actions for managing resource values in the area. In addition, the area was found to meet the relevance and importance criteria for ACEC designation. The Steamboat Mountain ACEC was designated in 1997 with the signing of the ROD for the Green River RMP.

Comment Number: 100,156

Comment:

We oppose establishment of any more Wilderness Study Areas because it is too hard to have them released from that status.

Response:

The Proposed JMH CAP does not recommend additional WSAs. Please see Appendix 18 in the final EIS.

Comment Numbers: 100,183; 100,240; 100,332; 100,390; 100,440; 100,433; 200,223

Comment:

Only Wilderness Study Areas authorized under Section 603 of the Federal Land Policy and Management Act should remain and be recognized in the EIS. Identifying lands beyond this authorization violates a recent settlement decision by the United States Department of the Interior in the United States District Court, District of Utah. Sections 201 and 202 of the Federal Land Policy and Management Act may not be used as surrogates for Section 603 wilderness recommendations. Appendix 18, which discusses proposals for additional Wilderness Study Area designations, should be revised or deleted.

Response:

The Proposed JMH CAP does not recommend additional WSAs. Please see Appendix 18 in the final EIS.

Comment Number: 100,258

Comment:

To further mitigate the impacts from the significant mineral developments that may occur in the JMH CAP area, the BLM should also designate, as part of the final EIS, multiple Areas of Critical Environmental Concern (ACECs) to protect at least 90% of sage-grouse winter use areas. The boundaries of these areas should follow the results of Recommendation # 1 (Winter) on page 2. These areas will be critical to maintaining population persistence over time.

Response:

Currently, BLM has only 1 year of data regarding the greater sage-grouse winter use areas, which is an insufficient basis for establishing a special management area. BLM is continuing to gather data and can revisit the opportunity to consider a special management area designation, if needed, at any point in the future. However, management prescriptions are in place in the Proposed JMH CAP to manage sensitive resources.

Comment Number: 100,332

Comment:

Page 2-88, National Historic Trail Viewshed: there is no CFR law or statute that requires protection of a 3-mile viewshed along a National Historic Trail. I am a member of OCTA and I do not know of any such request from that group either.

Response:

The management of the viewshed along the NHT was established in the Green River RMP in 1997. Congress also designated South Pass a National Historic Landmark in 1959. However, no definite boundary has been established by the Park Service for the area. The Green River RMP ROD, signed in October 1997, established the South Pass Historic Landscape ACEC situated for 6 miles along the NHT's corridor across the Continental Divide (i.e., the summit of South Pass). The ACEC was designated to manage an appropriate area in recognition of the South Pass National Historic Landmark. The Green River RMP includes management prescriptions for the South Pass Historic Landscape ACEC. Development of these prescriptions used geographic information systems technology to assess the viewshed surrounding the four Congressionally designated NHT. The result of this exercise indicates that about 33,700 acres are visible from the corridor in which the four NHTs are located, whereas about 20,080 acres are not visible from the trails. The BLM concentrated intensive management prescriptions on the areas visible from the trails while less stringent management was applied to the other acreage. In the RMP process, both historic trails advocacy groups and local landowners in the region were supportive of this strategy for managing the greater South Pass region.

Comment Number: 100,376

Comment:

Since releasing the supplemental draft EIS, there has been a major change in the agency's policy toward designation of new wilderness and the protection of existing Wilderness Study Areas (WSAs). Pursuant to the settlement reached in State of Utah v. Norton, we understand the Secretary of the Interior no longer intends for BLM to exercise its authority pursuant to the land use planning provisions of FLPMA to conduct inventories of the public lands in order to identify lands with wilderness characteristics and to preserve those lands as WSAs. Moreover, existing WSAs created pursuant to Section 202 of FLPMA may lose their protected status.

We believe the Secretary's decision is wrong as a matter of law and will be overturned. For purposes of this planning process, however, BLM must complete a supplemental NEPA document addressing the impact of the Secretary's decision on public lands in the Jack Morrow Hills. The Secretary has said that she intends to protect public lands with wilderness characteristics. She has yet to release new regulations or guidance on how that goal will be achieved in the absence of WSA status or the current Wilderness Handbook. The supplemental NEPA document for the JMH CAP should address the availability and efficacy of alternative mechanisms for preserving wilderness values on the Jack Morrow Hills. The JMH CAP should establish standards to ensure that the wilderness qualities of such areas are not impaired or degraded. Southern Utah Wilderness Alliance v. Norton, 301 F.3d 1217 (10th Cir. 2002). We believe the citizen-proposed areas described in the Wildlife and Wildlands Alternative deserve to be preserved in their current untrammeled state. BLM must address how that goal can be achieved in this planning process in light of the new policy on WSAs.

We believe the agency has a continuing duty to identify and protect eligible wilderness lands. BLM should evaluate all lands that are roadless and larger than 5,000 acres (or capable of being administered as wilderness), regardless of ownership status, as well as lands submitted under citizen's wilderness petitions and/or which have been determined by BLM to possess wilderness characteristics (see 43 U.S.C. §§ 1711(a), 1712).

For example, the Whitehorse Creek WSA was inventoried prior to 1991 and was included in BLM's Wyoming Statewide Wilderness Study Report issued in September 1991. However, the Report indicates that the Whitehorse Creek WSA was "studied under Section 202 of the Federal Land Policy and

Management Act..." (BLM, Wyoming Statewide Wilderness Study Report Wilderness Study Area Specific Recommendations (September 1991) at 323). What is the current status of this WSA?

Alternative 2 in the supplemental draft EIS proposes WSA status for 8,800 acres in the pinnacles area of the Jack Morrow Hills. Is that Alternative no longer reasonable given the settlement in Utah? If not, what other mechanisms are available to BLM to preserve these lands?

Response:

Please see response to comment number 100,018 for management of existing WSAs. The information in Appendix 18 of the final EIS has been updated to reflect the recent changes attributed to the Utah settlement as it applies the JMH CAP final EIS. BLM has several mechanisms for managing public lands that do not necessarily include providing a special management designation area. However, where applicable, special management area (SMA) designations are considered. These options were considered in the alternatives in the supplemental draft EIS and again in the final EIS. BLM also reviewed again the adequacy of management prescriptions in the alternatives of the final EIS to ensure they appropriately provide for sensitive resources in the areas that were proposed for WSA designation by citizen's groups.

In regard to the Whitehorse Creek WSA, this area was studied under Section 603 of FLPMA, along with the other six existing WSAs in the JMH CAP planning area. Because it contains less than 5,000 acres, the authority to designate the area a WSA came under Section 202 of FLPMA. The area was identified for management as a WSA based on the findings of the interdisciplinary team and public comment and input on the area during the original wilderness inventory review in the 1970s and 1980s.

Comment Number: 100,380

Comment:

The Wilderness Study Area boundaries developed from the Intensive Inventories in the 1970s and subsequent recommendations were determined by the BLM's assessment of potential for mineral and oil and gas extraction, not by the wilderness qualities without the conflicts of industrial development. The Wyoming BLM recommended much smaller boundaries for Wilderness Study Areas, and smaller yet for wilderness designation. Only 70,000 acres were recommended for Wilderness.

The BLM needs to further inventory the WSAs based on the wilderness resource qualities alone without influence from the oil, gas, or mineral potential. The inventory in the JMH CAP found only 8,000 acres of the Pinnacles WSA worthy of recommendation. Since this was determined far in advance of the Utah case settlement that would affect new wilderness recommendations, the BLM should include the Pinnacles WSA recommendation into their final proposal. To not recommend one acre of wilderness in the JMH CAP would not be adhering to the Multiple Use/Sustainable Yield Act.

Response:

Please see the information provided in the updated Appendix 18 of the final EIS.

Comment Number: 100,381

Comment:

Steamboat Mountain - 5,000 acres - should be designated as a Wilderness Study Area

Response:

Because of private and state lands within the suggested WSA area, there are less than 5,000 acres of BLM-administered public lands involved. Please see the information provided in the updated Appendix 18 of the final EIS.

Comment Number: 100,385

Comment:

Each alternative recognizes ACECs and Special Management Areas (SMAs). However, each ACEC and SMA existed prior to the supplemental draft EIS, excluding the addition of the West Sand Dunes Archaeological District (see supplemental draft EIS, Map 60). In essence, BLM did not take a critical look at other areas that have potential ACEC and SMA value, and therefore failed to examine these areas for all of their potential uses. Without any critical evaluation of these other areas, the Preferred Alternative identifies them as open for mineral development.

Response:

BLM disagrees. BLM examined the relevant and important values for potential ACEC designation where appropriate (see Appendix 1 of the supplemental draft EIS). Alternatives 2 and 3 look at new ACEC designation for cushion plant communities, as well as expansions of three existing ACECs. BLM also considered Research Natural Areas, Special Recreation Management Areas, National Natural Landmarks, and National Conservation Area Designation. Not all these designations were analyzed in detail and a discussion of these can be found in Chapter 2, Alternatives and Management Options Considered But Eliminated From Detailed Analysis.

The designation of an ACEC does not automatically provide for the management of related resource values. The management actions provided in each of the alternatives provide a range for comparative analysis. In some alternatives, resource values are protected; in other alternatives protection is not provided. The Preferred Alternative provides for a balance of uses and protections for sensitive resources. This has been updated and clarified in the Proposed JMH CAP in the final EIS.

Comment Number: 100,438

Comment:

The Wyoming Chapter of the Sierra club supports and encourages the BLM to maintain protect and expand Wilderness Study Areas within the Jack Morrow Hills Area. Wilderness Areas are special places that are valued by the public for a variety of reasons. Wilderness has been a part of America since its beginning. For this reason, Americans have a special attraction to wilderness areas. Wild lands offer opportunities for reflection, observation and exploration of ideas and experiences that can only be found in wild places. For these reasons, among others, we urge the BLM to put the protection of Wilderness Study Areas above oil and gas development.

Response:

Please see the information provided in the updated Appendix 18 of the final EIS.

Comment Number: 100,451

Comment:

The management objectives falling under the South Pass Historic Landscape ACEC, South-15 in particular, could use some adjustment. To describe grazing management actions and objectives for a landscape is simply generic. A landscape is comprised of much more than science. The landscape at hand has historical elements of westward expansion and manifest destiny, as well as living and thriving results of this move westward. Consequently, any management objective that is designed to ensure the integrity of the landscape must consider the impacts on current ranching operations that any strictly science-based management action is designed to accomplish.

We suggest the management objective South-15 be changed to read "Livestock grazing objectives...(upland and riparian). Continuity of historic livestock operations will be considered to avoid unnecessary ranchland fragmentation." It is necessary to include this change because when present day livestock operations change, there always exists the chance that these operations will shift from agricultural to other hands. Other hands may have other plans. The commercialization of a landscape is not necessarily conducive to the landscape's health.

We suggest the management objective REC-5 drop the designation of the Continental Divide National Scenic Trail from the special recreation management area category. As we stated earlier, we object to the commercialization and exploitation of a trail that exists solely in geologic terms. There is not historical value nor is there any heritage value in the trail. There did not exist a primitive or first-peoples that made their enjoyment (recreation) out of traversing the North American Continent from up or down, nor is there today a group of people whose sole purpose in life is to traverse the land from top to bottom. This type of endeavor is not for those who need signposts to guide them in their way of life. Specifically, for those who wish to go to some "wild" place, then most certainly those seeking the "wild" would wish to not have their trek posted from sign to sign. Once it is posted it is most definitely tamed, and once it is tamed it is only a matter of time before it is conquered. Once it is conquered the question then becomes of what to do with it, and thus we will plan for the Trail's then survival, but the "wildness" will certainly be gone.

Response:

The BLM's planning decisions only apply to BLM-administered public lands. However, the Rock Springs Field Office understands the need to work with private landowners, and has done so for many years. The JMH CAP provides direction to resolve resource conflicts or mitigate any adverse impacts of resource use. An equally important purpose is to protect the long-term productivity of the public lands. The JMH CAP and the Green River RMP thus try to protect the economic and activity interests of all current users, while minimizing conflicts and maintaining basic soil, vegetation, and wildlife resources that future users will require.

In 1978, Congress designated the CDT as part of the National Trails System. National scenic trails "provide for maximum outdoor recreation potential and for the conservation and enjoyment of nationally significant scenic, historic, natural or cultural qualities of the areas through which such trails may pass." The Great Divide Basin is arguably one the toughest sections of the CDT simply because of the vast emptiness and lack of water. When BLM issued the Environmental Assessment for the Designation of the Continental Divide National Scenic Trail in 1998, many comments suggested rerouting the trail to include the Continental Peak and Oregon Buttes area for inclusion into the trail system. People commented that this geographic area offers spectacular beauty, historical significance, wildlife values, and geological diversity compared to the location of the trail along the eastern rim of the Great Divide Basin. In the National Trails System Act, Congress approved of designating "side-trails" off the main designated trail to incorporate areas of interest such as the Continental Peak-Oregon Buttes area. The main route of the

CDT is located out of the planning area. The Continental Peak side trail will not require any development because the trail will follow existing two track trails and short segments of cross country travel appropriate for hikers and equestrian users. Signing would be addressed on a case-by-case basis and would be kept to a minimum. Use of the BLM-managed CDT in Wyoming is estimated as 20 to 40 through-hikers per year. BLM does not anticipate that use along the side-trail would be high, but the Continental Peak side trail certainly meets the standards that Congress set within the National Trails System Act.

Comment Number: 100,455

Comment:

Citizens have submitted intensive inventory reports for the Honeycomb Buttes, Harris Slough, Oregon Buttes, Oregon Buttes Badlands, the Big Empty, the Joe Hay Rim, South Pinnacles, Alkali Draw, the Pinnacles, Sand Dunes, and Buffalo Hump. We incorporate these inventory reports in full into these comments. BLM has responded to many of these inventories, but not all. We are still awaiting a response on Whitehorse Creek and Sand Dunes. The responses indicate a cursory and superficial level of inventory effort, and clearly do not match the comprehensive quality of the citizen's inventories to which they respond. Similarly, the conclusions of the BLM's inventories thus far have been deeply flawed, featuring arbitrary and capricious judgments that areas lack naturalness and outstanding recreation opportunities, while similar areas were judged to possess full wilderness qualities during the initial BLM series of inventories, and are now protected as WSAs.

There is no alternative that contemplates establishing new WSAs for the entire citizen's proposal. In light of NEPAs requirement to analyze a range of reasonable alternatives, even if such alternatives are outside the agency's jurisdiction, the BLM must consider and should implement such an alternative. Clearly, it would be within the prerogative of Congress to designate all of these lands as Wilderness. In addition, recent reconnaissance by citizens has opened up the possibility that an area, including Steamboat Mountain and the canyons to the northwest of it may also possess the size, naturalness, solitude, and outstanding recreation opportunities to qualify as wilderness. Steamboat Mountain is a well known landmark, which also possesses incredible wildlife, cultural, and historical values (e.g., buffalo jump); we urge you to not only give serious consideration to all of these wilderness values, but to go one step further and recommend this deserving landmark for designation as Wilderness. As part of an amended Affected Environment section, the BLM should evaluate the wilderness qualities of these lands and consider establishing a new WSA here in at least one of the agency's alternatives.

All of the lands within the citizens wilderness proposals submitted to BLM over the past several years meet the criteria of size, naturalness, solitude, and/or outstanding opportunities for primitive and unconfined recreation that are the benchmarks for the wilderness act. Each of these areas substantially exceeds the levels of these attributes for some lands already within the National Wilderness Preservation System. All of these areas should become Wilderness Study Areas (WSAs) under the JMHCAP, and the BLM should establish standards to ensure that the wilderness qualities of such areas are not impaired or degraded, in accordance with Southern Utah Wilderness Alliance v. Norton, 301 F.3d 1217 (10th Cir. 2002).

Brief notes on proposed expansions are found below. Please reread the Citizens Wilderness Inventories for the JHM CAP planning area and respond to it in detail (beyond the cursory and brief Area Evaluations) in the final EIS:

Alkali Draw. Regarding the Blue Rock Release tract, the BLM has claimed that this area is still scarred by old seismic exploration. With its Wilderness Inventory for Alkali Draw, BCA presented a photograph showing the entire extent of the Blue Rock Release tract from a lofty vantage point. The photograph

demonstrates that no trace of past seismic exploration can be detected in the area. This photograph has made the Blue Rock Release Tract, a poster child for the ineptitude of BLM's inventories, ineptitude that seemingly is increasing over time. The time has come for the BLM to own up to past mistakes and make this area part of the WSA. For the Bush Rim release tract, the BLM, in its recent Inventory Area Evaluation, notes "The main reason the Bush Rim release tract was dropped from further wilderness review was that there was, and still is, a major improved road leading through this area to the Treasure Unit wells located in the Alkali Draw WSA." This statement is only partially correct—the improved road runs through the south half of the Bush Rim release tract, leaving the north half unaffected. We concur that this road precludes wilderness designation for the lands to the west of it (unless and until this route is fully reclaimed), and noted as much in the Citizens Wilderness Inventory. This road and lands to the west were purposefully excluded from the citizen's proposal for this very reason. These facts render the Treasure Unit access route irrelevant to the consideration of the citizen's proposal for wilderness.

Big Empty. BLM claimed that although this area was fully roadless, human intrusions were sufficient to detract from naturalness and that the area lacked solitude and outstanding recreation opportunities. The naturalness of the area is equal to lands already designated as WSAs in the JMH CAP planning area; on an impact-per-acre basis, the plugged wells and two-tracks are equivalent to any existing WSA. In terms of solitude, the vast expanse of the area alone—some 35,000 acres—confers ample solitude. In addition, this is the only stretch of the old Point of Rocks—South Pass Stage Road, dating from 1860, that remains in its original condition and runs through a pristine landscape similar to that during presettlement times. Thus, traveling this route through desert wilderness is a historical recreation opportunity unparalleled in Wyoming. Much is left to judgment in the BLM's wilderness area evaluation reports, and this leads to a vulnerability to poor judgment, which is evidenced in this particular case.

Harris Slough. The BLM argues for this area that it lacks naturalness and solitude/outstanding recreation opportunities. This area is outstandingly suitable for hiking and horseback riding, is scenic, and by the very nature of the rarity of untrammeled Red Desert landscapes, is outstanding. The naturalness of the area is comparable to existing BLM WSAs in the area and is certainly far greater than many areas, like the Great Swamp and Collegiate Peaks, which Congress has already designated as wilderness.

Buffalo Hump. Although the BLM agrees that this area has the requisite naturalness, it claims that solitude/outstanding recreation is lacking here. The landscape in the citizen's proposal for this area is virtually identical to that of the adjacent Buffalo Hump WSA, which the BLM has already acknowledged as possessing these qualities. The innumerable vegetated dunes and swales in this area make a person invisible to others even a few hundred meters away; thus, solitude is outstanding and this area should be granted WSA status.

Honeycomb Buttes. BLM has claimed that most of the impacts in this area are reclaiming, but are still visible. Nonetheless, at no point are many impacts visible at any one time, and correspondingly, none of the individual impacts are major landscape scars. In point of fact, the number and extent of impacts per acre in this unit is comparable to levels within existing WSAs, demonstrating that naturalness here meets wilderness criteria. Furthermore, BLM claimed that the area lacked outstanding recreation opportunities, and yet protecting this area will enhance the solitude and recreation opportunities in adjacent lands within the Honeycomb Buttes WSA, and conversely, development of this area would reduce the quality of recreation opportunities within the current WSAs by destroying the viewshed and creating visual intrusions that detract from the wilderness experience of the visitor. For these reasons, this area should be united with the current Honeycomb Buttes WSA and granted the full protection of WSA status.

Oregon Buttes. BLM recognized that the proposed addition possesses naturalness but argues that it lacks solitude and/or outstanding recreation opportunities. This area adjoins the Oregon Buttes WSA and is prominent in the viewshed of the Oregon Buttes, and were this area to be subjected to development, the

quality of the wilderness experience in the current WSA would be diminished. The BLM should protect the current integrity of the viewshed and the quality of the overall recreation experience in the Oregon Buttes by making the proposed expansion a WSA.

Oregon Buttes Badlands. The BLM admitted that this area possesses naturalness, but argued that the recreation opportunities were not outstanding. To the contrary, the scenic badlands of the Joe Hay Rim lend outstanding qualities to the recreation experience, and the uniqueness of the few pristine landscapes that remain make this area outstanding. It deserves to be a WSA.

Parnell Creek. The BLM makes a litany of 9 reservoirs and 4 abandoned well sites, and yet these numbers are comparable on a per-acre basis to other existing WSAs. Furthermore, the position of the proposed wilderness in deep draws out of sight of improved roads and human activities gives this area perhaps the greatest degree of remoteness in the JMH CAP planning area. Furthermore, the few human impacts are so reclaimed as to be virtually unnoticeable. For these reasons, the BLM's inventory arrives at erroneous conclusions.

The Pinnacles. The BLM acknowledged that 8,900 acres of this wilderness proposal possessed wilderness qualities, but arbitrarily cut off part of the area at faint two-tracks, excluding adjacent, qualifying lands that are just as pristine. This entire area should be a WSA, joined together with the current South Pinnacles WSA.

The Joe Hay Rim. BLM argues that this area lacks solitude and naturalness, but the biggest impairments they can come up with to support this contention are a handful of stock ponds and a strip of crested wheatgrass that doesn't match the neighboring vegetation. Atop the Joe Hay Rim, you can get top-of-the-world vistas that stretch for miles, a recreation opportunity almost unmatched in the Jack Morrow Hills.

Whitehorse Creek and Sand Dunes. The BLM has yet to respond to these inventories; the agency must respond to this significant new information in the final EIS.

Response:

The information submitted in the Citizens Wilderness Inventories for the JHM CAP planning area was reviewed and considered carefully for each area you have identified. The areas were mapped and interacted with current GIS resource databases. A review of past inventory information documented during the initial wilderness inventories under Section 603 of the Wilderness Act was also completed to help identify what had changed, if anything, since that initial inventory and to review the findings of the interdisciplinary team that conducted the review at that time. The only area that had changed and had been identified as potentially having wilderness characteristics was the Pinnacles area. Field checks were also performed on all the areas, with a followup of interdisciplinary team reviews, including further field trips. The finding, based on this "hard look," was that only one area had wilderness characteristics: Pinnacles. This area was then incorporated into the supplemental draft EIS for consideration as a WSA in two alternatives. It was not recommended for WSA designation in the Preferred Alternative; however, management of sensitive resources in the area was provided. As a result of the Utah wilderness settlement, the Department of the Interior has terminated the procedures for considering new WSAs under Section 202 of FLPMA. Please see the information provided in the updated Appendix 18 of the final EIS.

In addition, please see response to comment number 100,376.

Comment Number: 100,456

Comment:

Unfortunately, many wildlands in the Red Desert/Jack Morrow Hills area are not adequately protected. In particular, the wildlands identified in Wilderness at Risk which are not designated BLM WSAs are ignored in the supplemental draft EIS and are not protected under BLM's interim management guidelines. As a result, these important wild areas are threatened by mineral development, new roads, ORV damage, etc.

Response:

Please see the information provided in the updated Appendix 18 of the Final Environmental Impact Statement. In addition, please see response to comment number 100,167.

Comment Number: 100,458

Comment:

BLM does not recognize the many acres of wilderness inventoried by Biodiversity Conservation Alliance in the supplemental draft EIS. We should protect all wilderness lands in JMH, especially the Pinnacles.

Response:

Please see the information provided in the updated Appendix 18 of the final EIS. In addition, please see response to comment number 100,376.

Comment Number: 200,002

Comment:

Please use scientific evidence to establish areas of pristine units to preserve unscathed.

Response:

Please see the information provided in Chapter 1 and the updated Appendix 18 of the final EIS.

Comment Number: 200,096

Comment:

Development within the sight of the Honeycomb Buttes or Killpecker Dunes? Don't even think of it.

Response:

Management direction has been in place to protect the visual and scenic values of these areas since 1997 when the Green River RMP was completed.

A-19.17 AIR RESOURCES MANAGEMENT

Comment Number: 100,059

Comment:

I would like to see any development in the desert be accompanied by a very strict air quality standard. This would go belong the pollution created by the gas and oil development and include the existing air pollution.

Response:

Elements of air quality addressed in the Jack Morrow Hills supplemental draft EIS include air pollutant concentration, atmospheric deposition and visibility. Concentrations are subject to legally enforceable standards, whereas deposition and visibility are subject to agency guidelines.

The concentration standards that are applied to the Jack Morrow Hills area, and throughout the United States, are the National Ambient Air Quality Standards (NAAQS). The NAAQS are set at a level that is "requisite to protect the public health" with "an adequate margin of safety" (Clean Air Act, §109(b)). In addition, the State of Wyoming may establish standards that are more (but not less) stringent than the federal NAAQS. Table A15-1 on page A15-2 of the JMH supplemental draft EIS presents the NAAQS and Wyoming Ambient Air Quality Standards (WAAQS).

Potential total air pollutant concentrations are compared with the applicable NAAQS and WAAQS. Potential total concentrations include the monitored background concentrations (existing air pollution), the modeled project concentrations (air pollution from the proposed project) and the modeled RFFA concentrations (air pollution from other sources). Figure A15-9 has been added to Appendix 15 of the final EIS and summarizes the potential total concentrations in the Jack Morrow Hills area. All potential total concentrations are below 40 percent of the WAAQS and NAAQS. The background concentrations are taken from the JMH supplemental draft EIS (table A15-1); the Pinedale Anticline project and RFFA concentrations are taken from the Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS Technical Report (table PW-700-C1-1.5, page A2).

Please see response to comment number 100,376 for PSD.

Please see response to comment number 200,206 for atmospheric deposition.

Please see response to comment number 100,376 for visibility.

Comment Number: 100,376

Comment:

The final land use plan adopted by BLM must ensure that state and federal air quality standards are achieved. BLM should adopt a pro-active approach to air quality issues by using the land use planning process and the EIS to gather baseline air quality data and fully analyze the cumulative impact of any actions that may be authorized under the JMH CAP, as well as past, present, and reasonably foreseeable future actions on all lands within the airshed. Instead, the supplemental draft EIS appears to rely on air quality data that is outdated given the substantial increase in oil and gas activity within the applicable airshed in recent years. Supplemental draft EIS at 3-56 (The latest data from the Pinedale CASTnet station is from 1999.). The JMH CAP should establish an effective monitoring program and adopt measures adequate to curb the release of pollutants if monitoring reveals that standards have been exceeded. CAA requires the prevention of any significant deterioration of air quality in some areas,

particularly in Class I airsheds applicable to National Parks and wilderness areas. The JMH CAP should adopt measures to ensure the air quality of all proposed wilderness within the planning area is preserved.

BLM must acknowledge that oil, gas, and coalbed methane (CBM) development on federal, state and private lands is a significant contributor to haze.

BLM has the obligation under FLPMA and additional authority pursuant to the terms of its standard leases to impose conditions on oil and gas development to preserve air quality.

Response:

The Clean Air Act requires that the Federal Government "comply with all federal, state, interstate and local [air pollution] requirements ..." (CAA, §118(a)). Please see the chart added to the final EIS and referenced in the response to comment #100,059.

Background concentrations are shown in table 3.24 (JMH supplemental draft EIS), and descriptions of background and other monitored concentrations are presented on page 3-56 (JMH supplemental draft EIS).

Current air quality monitoring in Wyoming includes the following:

- CASTNet
  - Concentrations and dry deposition of nitrogen and sulfur compounds, and ozone
  - Three stations in Wyoming
  - http://www.epa.gov/castnet
- Wyoming Air Resources Monitoring System (WARMS)
  - Concentrations of nitrogen and sulfur compounds
  - Four stations in Wyoming (one in Pinedale)
- State and Local Air Monitoring System (SLAMS)
  - Concentrations of particulate matter
  - 17 in Sweetwater and Fremont County
- National Atmospheric Deposition Program (NADP)
  - Wet deposition of nitrogen and sulfur compounds, and precipitation chemistry
  - Eight stations in Wyoming
  - http://nadp.sws.uiuc.edu/
- Interagency Monitoring of Protected Visual Environments (IMPROVE)
  - Visibility
  - Six stations in Wyoming
  - http://vista.cira.colostate.edu/improve

A map has been added to Appendix 15 of the final EIS that shows the locations of air quality monitoring in Wyoming (Figure A15-12).

The appropriate air quality regulatory agencies examine potential PSD Increment Consumption when reviewing major stationary source PSD permit applications. The BLM is simply not authorized by the U.S. Congress to perform formal PSD Increment Consumption Analyses, but BLM does compare potential cumulative concentrations to the applicable PSD increment as part of NEPA analyses. Figure A15-11 has been added to Appendix 15 of the final EIS that shows potential cumulative concentrations in the Bridger Wilderness with respect to the applicable PSD Class I increments. All potential cumulative concentrations are below 5 percent of the applicable PSD Class I increment (Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS Technical Report (table PW-700-C1-1.5, page C4).

Maximum cumulative potential visibility impairment (Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS Technical Report (table PW-700-C1-1.5, page D2)) was estimated to be zero days of impairment greater than 1 deciview (FLAG and Regional Haze regulatory visibility threshold), and 9 days of impairment greater than 0.5 deciview (USDA Forest Service visibility threshold) in Bridger Wilderness. The maximum potential visibility impairment from the Pinedale Anticline project alone was 0.42 deciview.

The BLM Best Management Practices and Guidelines for Surface Disturbing Activities (Appendix 6 in the supplemental draft EIS), the standard oil and gas lease form, and site-specific analysis at the APD stage provide measures to mitigate impacts from construction activities.

Comment Number: 100,365

Comment:

The effect of diesel exhaust in continual outpouring on the environment was not addressed in the management plan.

Response:

The Pinedale Anticline air modeling analysis was used for this CAP/EIS. Tailpipe emissions from construction equipment were quantified in the "Pinedale Anticline Oil and Gas Exploration and Development Project: Air Emission Inventory," July 1999.

Comment Number: 100,380

Comment:

The air quality of the adjacent Wilderness Areas is suffering from the industrial development today. More development will exacerbate the air quality issue. The neighboring Jonah Fields intensified development, Green River Basin developments, power plant emissions, and trona mining and processing, combined with the proposed JMH CAP development, will harm the Wind River Mountains Class 1 airshed beyond repair.

Response:

Potential total concentrations in Bridger Wilderness were estimated to be less than 40 percent of the applicable WAAQS (see Figure A15-13 in Appendix 15). The background concentrations are taken from the JMH supplemental draft EIS (table A15-1); the Pinedale Anticline project and RFFA concentrations are taken from the Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS Technical Report (table PW-700-C1-1.5, page C4).

Also, please see response and chart on PSD for comment number 100,376.

Comment Number: 100,455

Comment:

The JMH CAP supplemental draft EIS contains no new air quality analyses. All conclusions regarding air quality impacts are based on the Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS prepared in November 1999. See JMH supplemental draft EIS at 4-157. ("Air quality modeling of regional impacts was performed in 1999 for the Pinedale Anticline Project in Sublette County. The JMH CAP planning area was included in the impact analysis of this air quality modeling. In examining whether the BLM activities in the JMH CAP planning area will result in the exceedence of any of these

air quality standards, it has been assumed that the results of the 1999 modeling remain valid." JMH Plan at 4-157. Thus, the validity of the JMH CAP's disclosure of air quality impacts depends entirely on the continuing accuracy and scientific integrity of the Pinedale Anticline EIS analysis. This assumption is flatly incorrect and renders the air quality analysis utterly inadequate.

The BLM's use of the 1999 Pinedale Anticline EIS analysis to satisfy NEPA's requirements for its Jack Morrow Hills CAP is flawed for several reasons. The Pinedale analysis from the 1999 EIS is dated, as it was based on an existing emissions inventory for 1998 and reasonably foreseeable future development, which was limited to oil and gas projects described in NEPA documents existing at that time. See Pinedale Anticline Oil and Gas Exploration and Development Project draft EIS Technical Report, November 1999, CALMET/CALPUFF Modeling Technical Report at 3-1 through 3-6; and Air Emissions Inventory, Sections 3.1.2 and 3.2.2 and Table 3.3 and Table 3.4.

Since the completion of the Pinedale Anticline air impacts analysis, a number of significant mineral, energy, and industrial development projects have either been authorized or proposed in NEPA documents that were not considered in the 1999 Anticline EIS. The large number of new emission sources - both approved and proposed since the 1999 analysis -- make the Pinedale analysis obsolete and wholly inadequate to support the Jack Morrow Hills CAP amendment to the Green River RMP.

1) South Piney - 210 wells, Sublette County, (68 *Fed. Reg* 4513, January 29, 2003);

2) EnCana, Incs Jonah Field Infill Drilling Project, Sublette County, 1,250 new wells (68 *Fed. Reg.* 12100, March 13, 2003)

3) Seminoe Road CBM Project, 1,240 wells, Carbon County, (68 *Fed.Reg* 12101, March 13, 2003);

4) Atlantic Rim CBM Project, 3,880 wells, Carbon County, (66 *Fed. Reg.* 33975, June 26, 2001);

5) Desolation Flats Natural Gas Project, Carbon and Sweetwater Counties, 385 wells, (65 *Fed. Reg.* 31595, May 18, 2000);

6) Wind River Natural Gas Development Project, BIA/BLM, Fremont County, 325 wells being added to existing field consisting of 160 wells never previously analyzed in NEPA document (68 *Fed. Reg* 3543, January 24, 2003);

7) Vermillion Basin Natural Gas Development Project, 56 wells, Rock Springs Field Office, EA prepared August 2000, BCA appealed decision to IBLA 2002;

8) Big Porcupine, TBNG, 453 CBM wells, scoping closed, EA or EIS pending;

9) Kennedy Oil Pilot Exploratory CBM Project, 20 wells, Rock Springs Field Office, Sweetwater County;

10) Copper Ridge Shallow Gas Project, 89 wells, Rock Springs Field Office, scoping ended November 15, 2002, EA pending;

11) Little Monument Unit Natural Gas Project, proposes 31 additional wells in the Fontenelle National Gas Infill Drilling Project area in Sweetwater County.

None of this additional oil and gas well development and associated air pollution in southwest Wyoming was evaluated in the Pinedale Anticline EIS. Further, the Pinedale Anticline EIS did not address other sources of visibility impairing emissions such as mobile source growth.

Even more important, because the Pinedale Anticline EIS air quality modeling domain (see Pinedale Anticline Technical Report, Figure 2-1) arbitrarily excludes the Powder River Basin, an area experiencing tremendous industrial growth, including new coal and natural gas fired power plants, strip mining, and rampant oil and gas development, an array of significant new emission sources were not even considered. Recent environmental studies have shown that the emissions generated in the Powder River Basin contribute to air quality problems in several sensitive receptors in central and western Wyoming.

The January 2003, final EIS for coal bed methane development in the Powder River Basin in Montana and Wyoming predicted significant visibility impacts to over a dozen mandatory Class 1 areas, including several Class 1 areas in western Wyoming. See Tables 4-95, 4-96, and 4-97 and discussion of cumulative impacts on pages 4-386 through 4-392. As this study shows, emissions of atmospheric pollutants from industrial activity in the Powder River Basin is contributing to visibility impairment throughout the region, including Class 1 areas in western Wyoming such as the Bridger and Washakie Wildernesses. Thus, the States reliance on an outdated study done in 1999 for an oil and gas project in Sublette County that did not even consider emission sources in the Powder River Basin is fatally flawed.

Problems with the EISs air quality analysis are not limited to the obvious concerns related to the BLM failure to include and evaluate all relevant emission sources. For a detailed review of the many serious deficiencies in the JMH supplemental draft EIS, please see Memorandum from Robert E. Yuhnke, to Renee Dana, BLM, attached hereto as Exhibit 3, and incorporated herein by reference.

Response:

Regarding your comment that the BLM "assumed that the results of the 1999 modeling [Pinedale Anticline] remained valid." BLM uses the best data available at the time of analysis. Emission inventories are being updated for the Pinedale and Rawlins planning efforts. Further analysis will also be done for the Jonah Infill, South Piney, Seminoe Road, Atlantic Rim, and Wind River projects.

To be included as RFFAs, a proposed project must have emission data developed adequate for air quality dispersion modeling. When the JMH EIS was written, the projects listed did not meet this RFFA inclusion criterion. In fact, many of the projects listed currently do not meet this criterion.

- South Piney, Jonah Infill, and Wind River are now finalizing their respective air quality protocols. Dispersion modeling will be performed for these projects.
- Seminoe Road and Atlantic Rim have just begun to develop their emission inventories. Dispersion modeling will be performed for these projects.
- Desolation Flats draft EIS was published in April 2003. Dispersion modeling was performed for Desolation Flats.
- Vermillion Basin.
- Little Monument (Kennedy Oil).
- Copper Ridge Preliminary Draft EA still being reviewed.

The Powder River Basin was excluded from the Jack Morrow Hills analysis because of the distance from the PRB sources to the JMH CAP planning area. The Guidelines on Air Quality Models (40 CFR part 51

Appendix W) states that CalPuff results are adequate from 50 to 200 km (125 miles) from the emission source and may be acceptable out to 300 km (190 miles).

Comment Number: 200,206

Comment:

Air quality regulations referenced in Appendix 15 do not specifically address any issues specific to the Red Desert Basin. The reference to criteria pollutants (CO, PM2.5-10, NO2, O3, HAPS, Pb, and SO2) are only made reference to in regulations and not detailed. Moreover, data from the NADP and CASTNet sites in the Pinedale area, and specifically the Pinedale Anticline Project, are not representative of pollution loading in the Jack Morrow Hills area. Although data is sparse to nonexistent in the Red Desert area (Great Divide Basin) of concern, there was an atmospheric modeling study done in the vicinity (http://deq.state.wy.us/aqd/index.asp?pageid=132). Data for the Southwest Wyoming Technical Air Forum (SWWYTAF) models included NADP, CASTNet, and IMPROVE values. Deposition values from Pinedale, Sinks Canyon, South Pass, and Gypsum Creek were also used.

Although I have been a vocal opponent of the CALPUFF model used (a localized Los Angeles Basin model extrapolated to a tristate area regional model) in the SWWYTAF study, some valid conclusions can be made. Namely, that regional haze from Utah, and the Great Divide Basin is swept into the Little Colorado Desert where the parcel of air of concern continues its travels past Big Piney and Pinedale to the basin head in the Bridger Teton National Forest. This parcel must exit the Green River Headwaters over Union Pass due to the conservation of mass principle. The strong, warm winds in the Dubois area are representative of this exiting mass and adiabatic compression. The exiting parcel is then distributed in the Upper Wind River Basin.

The SWWYTAF did not use a full Lagrangian model and relied on a much simpler Eulerian model that did not take into account the complex air chemistry that occurs within the parcel itself. Eulerian models can be used for trajectory analysis, but cannot be used for understanding atmospheric chemistry. However, simple aerosol particle chemistry may be understood.

This channeling of air is similar to the studies of the Snake River Basin in Idaho (see Idaho Field Experiment 1981 NUREG/CR-3488) conducted by the NOAA Air Resources Laboratory Field Research Division in Idaho Falls where I was a visiting scientist. However, studies conducted in the Snake River Basin used SF6 tracers with aircraft samplers, wind profilers, SODAR, tall instrumented towers, tetroons (constant density following balloons) as well as other instrumentation in the basin. This experiment has been repeated several times, with similar results in each experiment. However, the distinction to be made is that real data was used in Idaho compared to a fundamentally flawed (data and modeling) study (SWWYTAF) in Wyoming that used very little real data.

The data used in SWWYTAF and data referenced in the Jack Morrow Hills supplemental draft EIS and the SWWYTAF is suspect. For instance the IMPROVE data used is sampled at approximately the same level (approximately 2,500m). A vertical profile of the atmosphere from below sample sites to a geostrophic level (where frictional forces from terrain are minimalized) of approximately 4500-5000m was not used. The IMPROVE data details pollution at 2500m level and does not show vertical variation. An example of this is in the Los Angeles Basin where air acid induced vegetation stunting shows a distinct line (much like a flood line on buildings) where inversions kept pollution mostly below that visible level. As most Wyomingites know, the Big Piney area is the coldest area in the state due to wintertime gravity currents in the surrounding mountains depositing cold air at night in the basin. However, air above 200m over Big Piney is relatively warm, with air masses still exiting the Upper Green River Basin. The point is that the atmosphere has many vertically stacked levels that are interdependent of

each other at times, and interrelated at other times. Single level sampling does not constitute a comprehensive study.

Specific, to the Red Desert area of the Great Divide Basin, very little is known about the meteorology there. The SWWYTAF model included emissions data from the Jim Bridger Plant in Superior, which is located on the western margin of the Red Desert. The "core area" of the Jack Morrow Hills, which encompasses the Steamboat Mountain ACEC and Buffalo Hump WSA is under the influence of the Jim Bridger coal-fired power plant (JBP). However, emissions from JBP are not so easily to discern. During strong zonal flow conditions (West to East winds), JBP and PM emissions from the surrounding area typically move down the Interstate 80 corridor toward Rawlins. During SW wind events, the JBP emissions and regional emissions from Utah pass over the JMH. To further compound matters the Red Desert Basin is a hydrologically enclosed basin and MAY BE an enclosed basin for atmospheric constituents near ground levels. My professional opinion is that the Shamrock Hills in the eastern Great Divide Basin are an impediment to low velocity zonal flows and keep the air masses from exiting the basin.

Likewise the Green Mountains and Ferris Mountains are impediments to northeast exiting air masses. Moreover, the rare event southerly winds are blocked by the southern edge of the Wind River Mountains. Easterly winds during strong spring snow events tend to flush out the basin. However, this retrograde easterly wind soon relaxes and air parcels move in the more frequent north to northeast direction.

The specific questions to ask from proposed development are: 1) What would the emissions in the JMH CAP planning area be from development? 2) Would these emissions be contained within the basin or be transported to other areas? 3) Would present emissions from the JBP and region be much larger that subsequent emissions from JMH development and therefore could be considered insignificant?

1) What would the emissions in the JMH CAP planning area be from development? My initial concern is not the HAPs, CO, NOx, and sulfur species emissions from development. Yes, there will be these types of emissions from drilling and other infrastructure such as compression stations. With proper best available technology (BAT) methods, these emissions can be minimized. With care and continuous BAT updates if the project commences, these emissions can be minimized. However, my main concern is with PM (particulate matter) emissions from roads.

Road emissions can also be categorized by the type of roadbed used. Obviously, limestone or granitic gravel decompose at different rates and assembly into very different aerosol size distributions. Limestone particle atmospheric chemistry is much different than clay or granitic chemistry. Limestone does mitigate acid rain but has to be moist to do so. Preliminary research studies have indicated that Green River Basin soils do mitigate acid rain in the Wind River Mountains. However, would increased limestone emissions contribute to a large degree the total moderation of acid rain? This question has not been answered. Limestone road-bedding would tend to make smaller particles versus larger particles for granitic materials.

Many people have read in newspapers that dust from the Gobi Desert has been measured in Texas. How can these particles move this far? Deposition rates are directly proportional to particle size and the kinetic energy of the surrounding air. In other words, large particles generally don't travel far, and likewise slow wind velocities don't move particles very far. When particles are moved by motor vehicles disturbing them or through direct action of the wind, these particles rub against each other and in the case of a dry atmosphere are reduced in size. The deliquescence (bloating) process is only of concern in a moist atmosphere which is usually not present in the Jams. However, when the dust particles reach a certain size distribution, a particle-to-gas or a gas-to-particle conversion may take place. This is where aerosol and atmospheric chemistry are interrelated. Therefore, wet and dry deposition are important. Because of the

complexity of these processes, a log-normal distribution is assumed for various regimes in simple models. Power-law distribution, modified gamma distribution, and remote continental distributions can also be used. Some measured distributions in a desert atmosphere show tri-modal or even more complex distributions. Because of many size particle distributions, clearly defined regimes are used to simplify matters. For EPA and WYDEQ purposes, only 2.5 micrometer and 10 micrometer distributions are used. The EPA is in the process of measuring an intermediate value which may be more indicative of haze that humans can see. We are definitely seeing increasing haze throughout Wyoming.

WYDEQ measurements of PM10 in the Powder River Basin has been consistently above regulated values due to roads linking coal bed methane wells. Likewise, the Pinedale Anticline and other gas field projects in the area have also exceeded regulated values. Using potassium chloride and other road treatments have somewhat mitigated dust problems, but still have not markedly cleaned up the air in the Gillette area.

2) Would these emissions be contained within the basin or be transported to other areas?

This question is the great unknown. Trajectory analysis in computer models can give us an idea, but real measured knowledge is needed. The computer models used and lack of collected or measured data have not done much to settle this question. My profession opinion is that larger (i.e., 10 micrometer) particles are probably contained within the basin. Smaller particles (i.e., around 5 micrometers) are probably mixed throughout the basin, and some particles being exported to other basins. The 1 micrometer and smaller particles are probably undergoing complex processes that are poorly understood. (Jaenicke, 1993, in Aerosol-Cloud-Climate Interactions) has suggested a trimodal distribution with particles smaller than 2.5 micrometers contribute 40-80% of collected PM10 mass in an interior continental atmosphere. (Li, et al., 1996, Nature) also suggest a trimodal distribution in desert atmospheres with modes being strongly correlated to wind velocity. Also of consequence is the disturbance of fragile soils to future emissions. When drill rigs and roads are established, a large amount of soil is made unstable and is subsequently transported into the atmosphere.

3) Would present emissions from the JBP and region be much larger that subsequent emissions from JMH development and therefore could be considered insignificant?

This question cannot be adequately addressed due to lack of data. There has not been any background measurements at all within the Great Divide Basin. Until present background values are measured, a conclusion cannot be drawn.

Recommendations:

There is very little understanding of the meteorology or atmospheric chemistry of the JMH. Sampling stations for PM2.5 and PM10 need to be set in place. Several meteorological stations that include U-V-W (vertical measuring winds sensors) need to be put in the area for input into atmospheric models. I believe NOx, CO, and other common gasses from proposed development would probably not need to be measured as they are most likely insignificant. Also gases would be exported to other regions and probably not impair visual values. A tracer study might also be of value for real trajectory analysis. Temporal and spatial values are sorely lacking.

Response:

The ambient air quality standards mandated in the Clean Air Act (NAAQS) apply uniformly everywhere in the United States (CAA, §109). The State of Wyoming has developed state standards (WAAQS), which may be more stringent than the federal standards that apply everywhere within Wyoming. There are no air quality standards specifically for the Red Desert Basin.

Although there are no long-term air quality monitoring data available for the Red Desert Basin, monitoring data representative for the vicinity of southwestern Wyoming are presented in Table 3-24 (JMH supplemental draft EIS). Total deposition of nitrogen and sulfur near Pinedale, shown in Figures A15-7 and A15-8 in Appendix 15, have been well below USFS guidelines (Fox, et al. 1989) from 1990 through 1999.

Precipitation pH and wet deposition of nitrogen and sulfur compounds are presented in Figures A15-14 through A15-19 in 15. Precipitation pH values below 5.0 may indicate acidification. Precipitation pH data show slight acidification (4.7–4.9) from 1987 through 1991 near Sinks Canyon and Gypsum Creek, and slight acidification from 1987 through 1998 near South Pass City. Deposition of nitrogen and sulfur compounds shows fairly flat trends from 1984 through 2000.

Thank you for providing the link to the modeling study at the DEQ Web site (http://deq.state.wy.us/aqd/index.asp?pageid=132).

The CALPUFF model is a Lagrangian dispersion model that predicts downwind air pollutant concentrations based on air pollutant releases assumed to be a continuous series of "puffs." It is EPA's preferred technique for assessing long-range transport of air pollutants (68 FR 18440).

There are 17 PM_{10} monitoring stations in Sweetwater County, 1 in Fremont County, operated by the State of Wyoming. Since 1993, there have been three exceedences of the 24-hour NAAQS (98th percentile PM_{10} concentration of 150 $\mu g/m^3$):

- FMC monitoring station measured a PM_{10} concentration of 297 $\mu g/m^3$ in 2000
- Black Butte monitoring station measured a PM_{10} concentration of 174 $\mu g/m^3$ in 2002
- FMC monitoring station measured a PM_{10} concentration of 189 $\mu g/m^3$ in 2003.

There have been no exceedences of the annual PM_{10} NAAQS from 1993 through 2003. PM_{10} concentrations from the monitoring station closest to the JMH CAP planning area are shown in figures A15-20 and A15-21 in Appendix 15.

The $PM_{2.5}$ monitoring station closest to the JMH CAP planning area is in Lander, Wyoming. Since 2000, there has been one exceedence of the annual NAAQS. There has been no exceedence of the 24-hour NAAQS. $PM_{2.5}$ concentrations from Lander are shown in figures A15-22 and A15-23 of Appendix 15.

AQ monitoring networks are not set up to measure vertical profiles of met parameters or concentrations. The CalPuff model does address vertical distribution of wind velocity and concentration.

Undoubtedly, tracer studies, vertical profiles, and trajectory analysis would be very informative. But the BLM is not required by NEPA to conduct scientific research. The BLM uses air quality analysis tools such as CalPuff in accordance with EPA guidelines as the best available analytical methodology.

A-19.18 SOCIOECONOMICS

Comment Number: 52

Comment:

"Minority Population" is defined by Instruction Memorandum No. 2002-164, dtd. 5/2/02, from the Assistant Director, Renewable Resources and Planning, subject: Guidance to Address Environmental Justice in Land Use Plans and Related NEPA Documents, as either (1) the minority population of the

affected area exceed 50 percent, or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population.

In Section 3.10 Environmental Justice, the supplemental draft EIS discusses this issue, and clearly states that "portions of Fremont County would be defined as an EJ population." It further states that "these areas are not likely to be impacted by actions within the planning area given the geographic distance between the reservation and the planning area."

This is nonsense. This is like saying people in Riverton or people in Dubois are not impacted by actions taken by the BLM on PUBLIC LAND within Fremont, Sublette, or Sweetwater county.

Physical distance from the Red Desert has no bearing on whether Tribes will be impacted by disruptive actions in the Red Desert. The Jack Morrow Hills were originally part of the Wind River Reservation as defined under the 1863 treaty. The area is acknowledged by the BLM itself as used frequently by Native Americans, including the Shoshone and Arapaho, and even Athabascan-speaking tribes, such as the Navajo and Apache.

Their own internal memo states, "The BLM will incorporate EJ considerations in land use planning alternatives to adequately respond to EJ issues and problems facing minority populations, low-income communities, and Tribes living NEAR public lands, working with, and/or using public land resources." The BLM CANNOT summarily dismiss the environmental justice issues of this draft EIS due to physical distance from the proposed action. As such, there are other EJ issues that are not addressed within this supplemental draft EIS.

As part of the policy/actions outlined in this Instruction Memorandum, it states, "The BLM State and Field Offices will continue to make EJ a mandatory critical element for consideration in all land use planning and NEPA documents. This requirement was established on an interim basis in IM-99-178, dated August 13, 1999."

Recommendations for outreach include:

- Share appropriate information about potential high and adverse impacts with minority populations, and/or low-income communities, and/or Tribes through workshops, information meetings, or other forums and solicit feedback and recommendations.
- When appropriate, schedule scoping/issue identification meetings in minority and low-income communities or on tribal reservations.

There were no public/scoping meetings held on the Reservation in preparation for this supplemental draft EIS. Nor were there any workshops of any kind offered to Tribal residents (and especially elders) to help them understand the NEPA process in terms that they can understand. This is clearly in conflict with BLM internal requirements.

Response:

Please see the response to comments 100,378 and 200,213 regarding environmental justice issues. In addition, please see the updated information concerning consultation with tribes that has been documented in Chapter 5 of the final EIS.

Comment Number: 100,332

Comment:

While this analysis adequately demonstrates the project-area economy will not be negatively affected by development (no major pressures will be placed on existing infrastructure, because the existing infrastructure has historically absorbed larger fluctuations), the analysis does not adequately represent the positive impact of development from the alternatives.

In the case of the JMH project area, a shift-share analyses (enclosed) of the data provided in EIS Appendix 16 shows that when the project area is compared to national and state benchmarks, there is no local competitive advantage to annual employment during most years between 1979 and 1999. The result is similar when compared to the Rocky Mountain Region.

While the area may have experienced marginal overall employment growth during any year, this growth was largely influenced by national, regional or state trends. Using a five-year average (1995-1999), the actual project area growth was 860, 1369, and 347 jobs below the national, regional, and state benchmarks, respectively.

This deficient employment growth, when compared to benchmarks, illustrates an important point about the significance of project-area development. Annual employment is projected to range between 128 and 188 jobs depending on the development alternative. These jobs will reduce the regional employment deficiency between 9% and 14% and the state employment deficiency between 37% and 54%. This represents significant job growth. In fact, 60 jobs (the difference between maximum and minimum alternatives) is also significant job growth.

Response:

The shift-share analysis does indicate that development in the JMH CAP planning area can provide additional employment opportunities in the economic study area to help alleviate the state and regional employment deficiency. However, the analysis does not address the cyclical nature of the jobs that would be created by increased development. The employment estimates represent annual average jobs supported by these activities. Actually employment numbers will vary significantly depending on when development occurs. For this analysis, drilling and production would increase significantly during the early part of the study period and then decline in later years. Thus, any increases in employment would occur during the first 5 years of the study period and then decline as drilling and production declined. In addition, it is likely that the estimates provided do not represent a total increase in employment, but a continued support of existing oil and gas sector jobs. So even though the increased oil and gas development will create new employment opportunities it does not represent a significant increase to regional employment.

Comment:

The document downplays the contribution of earnings from the mining sector and the impact of earnings on overall quality of life. In all cases, earnings are evaluated in isolation without regard to earnings-per-person employed, which better portrays the impact of changes in earnings.

For example, on page 3-61 the document states, "Although mining remains important in terms of earnings in this area, the industry has reported significant declines in earnings between 1979 and 1999…Other industries reporting declines in earnings between 1979 and 1999 include construction and farm services."

However, a much different picture is created if you consider earnings-per-person employed.

While the earnings-per-person in the farm services and construction sectors declined 19% and 35%, respectively, earnings in the mining sector increased 27%. In addition, the mining sector averages the highest annual earnings per person employed ($68,621 per person employed) compared to all other industry sectors (the next highest sector is transportation and public utilities at $46,321 per person employed).

Response:

Additional information will be provided in Chapter 3 of the final EIS (Section 3.9.3.2) on earnings per job trends.

Comment:

If one considers earnings a factor in quality of life, then the mining sector has historically provided the best opportunities in the project area for improvement in this qualitative measurement of well-being. Therefore, the jobs created by development of the project area are significant from the standpoint of maximizing earnings potential and thus maximizing the earnings contribution to quality of life.

Response:

Earnings are just one factor used to measure quality of life.

Comment:

Page 2-212 Cumulative impacts Economic Growth: See attached letter from Steve Jenkins explaining that the economic impact is statistically significant. Mr. Jenkins has a Masters Degree from Penn State in Economic Planning.

Response:

Comment is addressed above on the significance of oil and gas employment increases.

Comment Number: 100,343

Comment:

The socioeconomic analysis needs to be revisited to ensure that this analysis adequately represents the positive impact oil and gas development will have on the project-area economy.

Response:

The economic contribution of oil and gas development in terms of employment, income and tax revenues are considered in Section 4.12 of the supplemental draft EIS.

Comment Number: 100,344

Comment:

The preferred alternative does not adequately reflect the value of the mineral resources to be developed and the positive socioeconomic benefit to Sweetwater County, the State of Wyoming and the nation. Natural gas is currently in short supply. Development of these oil and gas leases would provide needed jobs for local workers, additional tax and royalty revenue to fund education and other public benefits and additional gas supply to help decrease the cost of gas for American consumers.

Response:

The economic contribution of oil and gas development in terms of employment, income and tax revenues are considered in Section 4.12 in the supplemental draft EIS.

Comment Number: 100,352

Comment:

The management plan should provide for continued oil and gas exploration and development. This industry is already subject to strict regulatory requirements and environmental regulations regarding development, withdrawals and closures. Disallowance of continued drilling activity would not only affect the local community, but the state and national economy as well. Continued monitoring and evaluation of future activities is imperative, but the future of the oil and gas industry in Wyoming must be sustained. Our local community would suffer from the loss of thousands of jobs in the oil industry. More workers would be forced to leave the area to find work. The local businesses, including my own firm, depend on the trade provided by these people and many would not survive. The State of Wyoming depends heavily upon the taxes generated by the mineral industry. The nation depends upon the oil and gas industry for its fuel.

Response:

Continued oil and gas development within JMH will support jobs and income in the regional economy.

Comment Number: 100,378

Comment:

Apart from this failure to recognize the above value of this resource, your agency also failed to accurately describe the current economic value the Jack Morrow Hills has in providing this wildland experience. And you certainly failed to consider changing demographics in the Rock Mountain west that shows that these wild and values will only grow and increase in worth over time.

In 4.7.1 Potential Impacts, the BLM states that greater sage-grouse hunting is assumed to remain constant throughout the time period of the study in the preferred alternative. Yet in 4.12, Socioeconomics, it describes its modeling for economic impacts and states "Greater sage-grouse hunting is expected to remain constant during the first part of the study period and then be eliminated with the expectation that the species could be listed as threatened and endangered under the Endangered Species Act." This is later contradicted in Appendix 16, Economic Analysis Methodology, Table A-16-12, where it states for all alternatives that "Hunting days for sage-grouse are expected to remain constant." Can we have faith in any of the statements regarding how this analysis was done?

Response:

The text has been modified in Table A-16-12 of the final EIS to be consistent with the discussion on greater sage-grouse hunting provided in Section 4.12.

Comment:

In 4.12, Socioeconomics, the BLM assumes that "management actions that cause herd numbers to decline may actually increase the number of hunting days spent in an area (i.e., hunters spend more days hunting fewer animals)" and so generate more economic benefit. This is confirmed on Table A-16-12 where the agency states, "hunting days increase due to oil and gas development dispersing elk." The BLM fails to

consider that declining herd size can also mean less available elk to hunt, fewer licenses issued and thus fewer hunter days.

Response:

Several factors will affect elk hunting within JMH during the planning period. Most importantly are the herd objectives established by WGFD. According the WGFD, licenses issued for the area are currently at a peak and are expected to decline in future years as the herd objective is reached. In addition, WGFD agrees that increased oil and gas development is expected to disperse the elk herd into the existing wilderness areas and areas of heavy brush. This situation will likely increase the number of days needed for hunters to achieve success and could increase recreational visitor days during the first 5 years of the study period. However, hunter days are also expected to decline for the second 5 years as drilling is decreased and the number of licenses issued is reduced. These assumptions take into account fewer hunters days toward the end of the period.

Comment:

Eliminates all recreational activity by residents of the 3 surrounding counties (Sweetwater, Sublette and Fremont) from the economic analysis, assuming it is not significant to the local economy. In explanation of this, the BLM states in Appendix 16 that "Money spent by nonresidents is respent in the local economy, generating additional income and jobs for local residents. Residential spending on recreation does not play into this analysis..." They assume if not spent in the JMH, the same amount of money would be spent elsewhere in the county on some other activity. This is not necessarily true, nor does it negate the economic value of these lands for recreation. Could one claim the same reasoning for oil and gas development? If not in the JMH CAP planning area, they will just do it elsewhere locally? This appears to be the most blatantly unsupportable assumption used in your economic analysis for recreation. It may have led you to essentially throw out over 75% of the value of these lands for recreation. It unjustifiably skews the analysis.

Response:

Please see earlier comment on Regional Economic Impact Modeling.

Comment:

Your modeling fails to include Fremont County economic and recreation data. The BLM uses the 3 county area of Sweetwater, Sublette, and Fremont as its base for determining the regional economy and for comparison to the Jack Morrow Hills. However, as already pointed out, their figures for dispersed recreational activities was only estimated using the Rock Springs database, and did not include the Fremont County office figures which may have provided better information regarding outfitter/guide use in the northern sections of the area. In addition, the input/output economic model used for the BLM economic analysis also excluded Fremont County. The BLM does acknowledge that there may be certain businesses located in Fremont County that are not represented in Sublette and Sweetwater counties," but they only mention livestock auction and implement dealers, and not the large outdoor education/outfitter and guide businesses that are predominant there.

Response:

Please see earlier comment on the I/O model developed by the University of Wyoming.

Comment:

Figure 16 shows annual employment supported by recreation, oil and gas operations and grazing. Figure 17 shows the potential earnings from these same activities over the 20 years of the study period.

Specifically, for the Preferred Alternative, the BLM shows only $3.4 million generated by recreation for the entire 20-year time period. This translates into only $171,800 per year! My quick nonscientific estimate of revenues generated from trips associated with the JMH CAP planning area, using pamphlets taken from the Lander Chamber of Commeree brochure racks for only 4 operators (using quoted prices, number of trips, and average # of participants) show an annual earning of $187,670 from just these few operators, --in excess of the BLM total for all recreational uses!

Response:

The estimate of $187,670 represents "expenditures" and is not comparable to earnings.

Comment:

In contrast to the BLM's data on hunting, the figures I obtained from the WY Game and Fish Department, show expenditures for hunting in the area to generate between $3.9 - 2.6 million annually (these figures are attached to this letter). How can the BLM's figures be so low, when they should cumulatively account for all recreational use, including dispersed activities, OHV use and hunting?

Response:

Expenditures are not equivalent to earnings.

Comment:

I took the BLM's listed figures for annual OHV recreation visitor days from Table 3-18, the annual dispersed RVDs from 3.4.3, and the annual average hunting days from Table 3-20 and used the Economic Assumption for Recreation chart at Table A16-13, which is the basis of the BLM's analysis. Although the BLM stated earlier that the hunter days could not be compared with BLM RVDs, that chart does provide figures per RVD in total economic impact, earnings and jobs for elk, antelope, mule deer, and sage-grouse hunting, as well as for OHV and dispersed recreational uses. Using the BLM's own data, I computed a total annual earnings level of $673,028 for all recreational uses, and an annual total number of jobs of 47. Your Figure 16 shows only 23 jobs annually.

Using the $673,028 figure for annual earnings then, the total earnings over the 20-year period should be closer to $13.5 million and not the incredibly low figure of $3.4 million the agency shows in Figure 17. Is this difference a result of assumptions made in the modeling and analysis? Does the elimination of recreational expenditures by county residents account for the 75% reduction in recreational earnings? I do not believe that such an arbitrary assumption in the economic analysis is valid. It greatly distorts the true economic picture of these lands for recreational purposes.

Response:

Earnings estimates in the supplemental draft EIS were adjusted for inflation and are not comparable to the estimates provided here.

Comment:

For total real earnings, the supplemental draft EIS states, "On an annual basis, total real earnings would increase between $2.4 and $3.3 million under various alternatives. This equates to less than 1 percent of total real earnings in the study area for 1999 and is thus not considered significant." (The Preferred Alternative projects earnings increase of $2.8 M per year). These figures for earnings include recreation, oil and gas, and grazing. Figure 17 shows this amount broken out by economic sector. Oil and gas alone are estimated to be $50.6 M over the 20 years or $2.5 M annually. Because the BLM did not present

figures for current earnings from the JMH CAP planning area, I cannot compare these increases to any current level. The agency only provided oil and gas earnings information for the state and 3-county area.

Given the agency's gross underestimation of the recreational economic benefits and its overly optimistic picture for oil and gas, I place little faith and reliability in the entire economic analysis in the supplemental draft EIS. It appears to be greatly biased in favor of promoting oil and gas development. As a result, the analysis fails to provide the public and public officials the information they need to make informed decisions regarding future management. I urge BLM to redo their analysis and correct their gaps in data and rework their many erroneous assumptions. Probably what would be best is for an independent entity to conduct a new analysis.

Response:

Of all the EIS sections, the most difficult to accurately describe is Socioeconomics. The economy of any geopolitical area can change dramatically and rapidly as a result of dozens of factors. The socioeconomic analysis is based on projected reasonably foreseeable development scenarios based on past activities and information, and information gathered from the public during preparation of the EIS for the JMH CAP. BLM would welcome any information you may have that could be incorporated into the appropriate files at the field office.

Comment Numbers: 100,378; 100,459; 200,213

Comment:

I disagree strongly with the BLM's contention that as an environmental justice community, the Tribes of the Wind River Reservation are not impacted by decisions within the draft EIS. The 1994 EJ Executive Order 12898 requires that federal agencies consider the affects of their actions on minority populations and if policies have adverse environmental impacts to such populations. The BLM report discusses this and acknowledges that the Native American community in and around the Wind River Reservation in Fremont County qualifies it as an EJ population. But then the BLM dismisses this because "these Wind River Indian Reservation areas are not likely to be impacted by actions within the planning area given the geographical distance between the reservation and planning area."

This analysis is wrong. Geographic distance from the planning area does not mean that Native Americans around the reservation will not be impacted. The Jack Morrow Hills area was originally part of the Wind River Reservation as defined under the 1863 treaty. The area is acknowledged by the BLM itself as used frequently by Native Americans, including the Shoshone and Arapaho, the two Tribes of the Reservation. The BLM also describes in its report its extensive contact and consultation with the Tribes to obtain information about sacred and "respected" sites within the planning area, ---which still hold significance for the Tribes. To then summarily dismiss this same Native American population as "not likely to be impacted by actions within the planning area" is ridiculous. Through the environmental land use decisions proposed in the BLM's report, the Indian populations of the Reservation are greatly impacted: cultural and sacred sites could be destroyed or harmed and have less protective standards than for non-Indian sites. This environmental justice EO was designed to help agencies identify their discriminatory policies; the BLM's dismissal of its applicability is erroneous.

Response:

There are no communities or low-income populations within the planning area and thus no direct effect or a disproportionate share of negative environmental consequences occurs on such communities. There are, however, areas and features in the planning area that are of interest to the tribes, and BLM recognizes this interest.

The term "environmental justice" has specific legal definitions relating to analysis of disproportionately adverse human health or environmental effects on minority and/or low-income populations. The Executive orders and policy guidance for cultural sites and sacred sites are separate from environmental justice and should not be confused with environmental justice intent. Issues regarding sacred sites are usually dealt with under AIRFA, E.O. 13007 and other laws, not the environmental justice framework. BLM recognizes that there are potential sacred sites of interest to the tribe and has consulted extensively with tribal members. Such consultation will continue as sacred sites are identified. The 1863 Treaty was never ratified, and the planning area is not within the 1868 Treaty area, which was ratified. BLM will continue consultation and information sharing as the JMH CAP is implemented.

BLM and Wyoming State Historic Preservation Office staff acknowledge that the supplemental draft EIS alternatives, with regard to Native American sites, were confusing and the intended management actions were not well articulated. BLM believes some of the sites of concern to Native peoples have the potential to help tribal peoples revitalize important aspects of their cultures and recognize that the intent, if not the precise wording of the AIRFA, speaks to these issues. BLM would like to work more closely with tribal peoples than has been the case in the past to assist tribes in using places on BLM lands in its cultural revitalization efforts. BLM hopes that development of interpretive materials and site-specific management efforts at sites of concern to the tribes on the Wind River Reservation will help improve understanding and appreciation of Native American (especially Eastern Shoshone and Northern Arapaho) history and culture.

Comment Number: 100,433

Comment:

I urge the BLM to carefully consider the fiscal impacts of its preferred alternative on both production opportunities lost and costs to the government to compensate lessees for loss of their valid existing rights.

Response:

Valid existing rights will be recognized. Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Numbers: 100,433; 100,455

Comment:

Page 4-163: The draft EIS assumes that "management actions that cause herd numbers to decline may actually increase the number of hunting days spent in an area (i.e., hunters spend more days hunting fewer animals)." This is truly an embarrassing assumption and shows the pro-gas development bias in the BLM analysis. While hunters may spend more time hunting fewer animals at first, this will be a short-lived, and unsustainable situation - as they won't come back to the area. Hunting success is key to return visits. Please analyze, display, and discuss the data used the support such an assumption. Please discuss the scientific studies used to develop this assumption.

The bogus assumption is repeated in Table A-16-12 where the agency states, "hunting days increase due to oil and gas development dispersing elk." The BLM fails to consider that declining herd size can also mean less available elk to hunt, fewer licenses issued, and thus fewer hunter days. Once again, please display and analyze the data used to justify such a biased assumption. Please also analyze the negative impacts to the economy from fewer hunters, fewer hunting licenses, and less hunting expenditure in the local economy.

Response:

The hunting assumptions take into account that the increase in hunter days attributed to dispersion would be short term and that declines are expected later in the study period. Refer to earlier comment on hunting assumptions.

Comment Number: 100,455

Comment:

Page 4-121: The draft EIS assumes a recovery rate of 2.2 billion cubic feet per well, based on historic data. Please analyze and display the variance that goes with this average. Please take a hard look and analyze and discuss the statistical accuracy of this estimate. Is the average recovery rate a statistically accurate estimate? What is the variance and standard deviation of the average? Does the estimate pass a simple t-test, or is the standard deviation too high?

Please analyze and discuss.

Response:

The estimated gas and oil-condensate ratio provided in Section 4.8.1, page 4-121, is based on the actual production data collected from the Nitchie Gulch Field and are based on the decline curve analysis. These are the true production curves that BLM used to estimate the cumulative production and life expectancy of the fields and wells. These are also used to calculate the economics of exploration and development activities. When you have these curves, standard deviation and student t-test would not be required and would not give a realistic value for your reserve and wells volume calculation. T-test is limited in that it is not applicable to reserve calculation in the oil and gas industry. Additional analysis of average well production does not appear to be appropriate. It was computed only as a means of getting a fair general estimate of well production.

Comment:

The majority of gas discussed in the draft EIS is gas that has yet to be discovered. Estimating quantities of undiscovered gas is fraught with uncertainties and economic risks for communities, companies, and the public. The Congressional Research Service (Corn et al. 2001) recommends economically recoverable resources as the basis of policy analysis.

Virtually every report on gas supply in the past 20 years has reported results in terms of economically recoverable resources (Environmental Law Institute 1999). If economic constraints on production are ignored, land management plans will overestimate the quantity of gas that will be recovered in the reasonably foreseeable future. Please discuss the economic assumptions and parameters used in developing the RFD and planning alternatives.

The USGS 50-percent estimate (the mean estimate) for economically recoverable gas represents the best, unbiased estimate currently available. Please justify why the USGS data, developed by government scientists, were not used in the analysis. Please justify why USGS estimates of economically recoverable resource were not used in the draft EIS. Please repeat the analysis using USGS data for both technically and economically recoverable gas resources.

Response:

The WSGS predicts the amount of total coalbed gas resource that may be present in the JMH CAP planning area and the total number of wells that may need to be drilled to develop that resource. The

BLM analysis projects only the number of wells that could be drilled over the 20-year period being studied, not the number that might ultimately be needed to completely develop the resource.

The summary of the updated USGS Assessment that has been added in the final EIS includes a forecast span of 30 years for its total undiscovered resource projections. The mean estimate projection will also be included in the final EIS.

A considerable amount of data was used and numerous factors were considered in preparing assumptions for the RFD and for each alternative. This information can be found in numerous places throughout the Supplemental Draft. In Chapter 3, Sections 3.5.4.1 (Oil and Gas), 3.5.4.2 (Coal and Coalbed Methane), and 3.9.3 (Economic Characteristics) summarize baseline data against which potential impacts caused by the planning alternatives are assessed. Chapter 4, Sections 4.2 (Determination of Significance), 4.3 (Analysis Methods), 4.8 (Minerals and Alternative Energy Resources), 4.8.1 (Potential Impacts on Leasable Fluid Minerals), and 4.12 (Socioeconomics), summarize assumptions and factors used in developing and analyzing the RFD and alternatives. More detailed review of data and factors considered and assumptions used in developing and analyzing the economics for alternatives and the RFD are presented in Appendix 13 (Hydrocarbon Occurrence and Development Potential Report) and Appendix 16 (Socioeconomic Data and Assumptions).

Comment:

The costs that USGS uses to assess economically recoverable gas and oil include the direct costs of exploration, development, and production at the wellhead, plus a profit margin. For gas to be considered profitable to recover, the full costs of gas recovery must be less than or equal to the price for gas. It is important to note that USGS estimates do not include transportation costs, nonmarket costs, or offsite mitigation costs such as increased water treatment costs. Please discuss potential mitigation costs and transportation costs associated with bring the gas to market. The draft EIS discusses water quality concerns and should include an analysis of mitigation costs.

Response:

The cost of mitigation plan preparation and compliance with its requirements varies from operator to operator and is dependent on the geographic location. BLM does not believe that mitigation cost should be evaluated for this supplemental draft EIS document. Operators will calculate this cost while preparing the economic analysis of their discovery to assure that it is profitable to drill additional wells in the area.

Potential mitigation costs, transportation costs, and water quality mitigation costs can vary considerably and may depend on well location, individual restrictions being imposed, ease of access to transportation networks, and market conditions. A description of how these types of restrictions affect the oil and gas resource is presented in Section 4.8 of the supplemental draft EIS.

Comment:

To account for the uncertainty inherent in price forecasts, USGS uses a range of prices, rather than a single-point estimate, to attain its estimates of economically recoverable gas. In the Rocky Mountains, the USGS estimates that less than 20 percent of technically recoverable gas is economically recoverable when prices (adjusted for inflation to 2002 dollars) are between $2.17 and $3.62 per thousand cubic feet (mcf) (Table 1, below). As context, from 1996 to 1999, wellhead gas prices in the United States averaged about $2.16 per mcf, with $2.00 per mcf viewed as the long-term price trend (Energy Information Administration 2002). At these prices, more than 60 percent of technically recoverable gas in the lower 48 states cannot be extracted profitably. USGS research underscores the economic risks from drilling in general and the specific risks to the public and communities from developing management plans that ignore economics (see table, page 69, in letter).

The fact that the USGS estimates that less than 5% of the gas in SW Wyoming can be recovered economically underscores the need to generate management plans and to estimate potential economic impacts to communities based on the gas and oil resources that are economic to recover. A more recent report by RAND estimated that 35-45% of the gas in the Greater Green River area is economic to recover.

Response:

The scientific reports do consider a large number of factors in evaluating the potential resources, specifically regarding oil and gas reserves. Reports published by various organizations have different factors as basis for their calculations. If USGS uses $3.75/MCF for its reserve calculation, that does not mean that operators cannot drill and produce oil and gas nationwide in a much lower price range. In addition, USGS reported percentages are only an estimate and should be proven with actual data before its validity can be questioned. WGS assumed a value of $2.25-2.75/MCF for its price projection.

As part of federal requirements, BLM follows standard operating procedures to comply with all applicable rules and regulations throughout the country. Feasibility of potential oil and gas in any area is the responsibility of the operators, not BLM. The actual potential percentage can be quantified on collection and evaluation of data from the area as drilling and production continues.

The WSGS predicts the amount of total coalbed gas resource that may be present in the JMH CAP planning area and the total number of wells that may need to be drilled to develop that resource. The BLM analysis only projects the number of wells that could be drilled over the 20-year period being studied, not the number that may ultimately be needed to completely develop the resource.

Comment:

Management plans that rely on technically recoverable estimates will dramatically overstate the gas recoverable and hence the jobs and revenues from future gas production (Morton et al. 2002). Please discuss how economic constraints on gas production were included in the analysis of expected gas recovery from each alternative, including the economic impacts associated with each alternative. Please complete a marginal revenue-cost analysis of estimated gas production levels. Please compare and contrast the marginal revenues with the marginal costs for the full range of drilling levels. For example, examine the cost from drilling wells in deeper formations with the potential revenues from deeper wells.

Response:

The WSGS predicts the amount of total coalbed gas resource that may be present in the JMH CAP planning area and the total number of wells that may need to be drilled to develop that resource. The BLM analysis only projects the number of wells that could be drilled over the 20-year period being studied, not the number that may ultimately be needed to completely develop the resource.

Section 4.8.1 provides the number of wells that will be economic to produce (new wells placed on production) and those that will not be economic to produce for each alternative. Table 4-15 presents resulting revenues for each alternative. Additional analysis does not appear to be appropriate.

Potential mitigation costs, transportation costs, and water quality mitigation costs can vary considerably and may depend on well location, individual restrictions being imposed, ease of access to transportation networks, and market conditions. A description of how these types of restrictions affect the oil and gas resource is presented at 4.8.

Comment:

Section 4.12 Socioeconomics, Page 4-160: Oil and gas development is associated with boom and bust cycles that cause social and community distress that should be discouraged if not avoided. Given the desire to reduce boom and bust cycles, please explain why staying within historical deviations—for employment or income—is a desirable goal? Please explain why the goal is not to reduce the deviation—that is, to decrease the boom and bust cycles—that result from proposed management actions. Please discuss how the historic deviation in employment and income in the study area compare the deviation at the state and national level. Is the local deviation in employment greater than or less than the deviation at state and national levels?

Response:

The analysis showed that increased gas development would not lead to significant changes in employment or population and is thus not expected to contribute to a boom and bust cycle.

Comment:

Please expand the socioeconomic analysis to include costs to communities from oil and gas development. The current boom-bust cycle has generated significant costs to communities in the Powder River Basin of Wyoming, costs that must be considered by public agencies rapidly promoting energy development. Many landowners are spending thousands of dollars on attorneys in order to negotiate a surface damage agreement to protect their property (i.e., the split estate problem). Other landowners have seen dramatic declines in property values. The City of Gillette has experienced a 12 to 15 percent increase in truck traffic plus a 26 percent increase in traffic violations between 1999 and 2000 (Pederson Planning Consultants 2001).

As a result, the expected life of city streets has decreased, while road operation and maintenance costs have increased. Dust from poorly constructed access roads causes health problems with horses, reduces the grass available for cattle, and negatively impacts air quality and visibility. County officials and residents are concerned that they will have to pay for cleanup and restorations costs, as the bonds posted by CBM companies for plugging and abandoning a well are inadequate. Please include an analysis of the costs of mitigating the air and water quality impacts from gas extraction. How do these costs change the analysis of gas potential? Please discuss who pays for these costs. Given that water quality may vary between plays, please include an analysis and discussion of water quality mitigation costs for each play, and the affect of those costs on the economic viability of the resource.

Response:

The magnitude of activity in the Powder River Basin is not comparable with the activities proposed in JMH. Increased mineral development is not expected to cause significant changes in employment or population and is thus not expected to cause increased social costs to local communities.

Comment:

As a result of the recent coal-bed methane boom, Campbell County has seen an increase in larceny, traffic accidents, destruction of private property, family violence, and child abuse, resulting in the county spending money to add 36 cells to its existing jail. The fire department has seen a 40-percent increase in emergency calls between 1997 and 2000 (Pederson Planning Consultants 2001). Similar trends have occurred in other counties in the Powder River Basin. There has also been a shift in the labor force. County workers have left for CBM jobs, resulting in instability in the labor force and making it more difficult to hire public workers (e.g., policemen, firemen) at a time where the counties and cities are stretched thin to handle the increased work load. The accelerated energy development has left many counties and communities unable to pay for or finance the increase in public service costs. We have

every reason to believe that similar costs and burdens will be placed on other communities where public and private land is threatened by energy development. The sociocconomic risks and costs associated with expedited energy development must be fully accounted for as part of the NEPA process involved with current push for energy development in the west. Please expand the analysis and discussion to fully account for such community costs.

Response:

The magnitude of activity in the Powder River Basin is not comparable to the activities proposed in JMH. Increased mineral development is not expected to cause significant changes in employment or population and is thus not expected to cause increased social costs to local communities.

Comment:

In the last 15 years the economies of the Rocky Mountain States have diversified, and resource extraction makes up an even smaller part of the economy. For many of these states and communities, service jobs, retirees, recreation, and hunting are the mainstays of the economy. In the new economy, public wildlands play a direct role in sustaining the recreation and tourism businesses, and wildlands play an indirect role in attracting nonrecreational businesses and retirees to western states. There is a growing body of literature suggesting that the future diversification of rural western economies is dependent on the ecological and amenity services provided by public lands in the west (Power 1996, Rasker 1995, Haynes and Horne 1997). These services (e.g., watershed protection, hunting, fishing, wildlife habitat, and scenic vistas) improve the quality of life for a trained and educated workforce, which in turn can attract new businesses and capital to communities. The natural amenities from public land provide communities with a comparative advantage over other rural areas in diversifying their economies. It is therefore important to recognize and analyze the potential negative impacts of oil and gas exploration on public land amenities and hence the economy as a whole, including the service and recreation industries, as well as on retirees and other households with investment income. The socioeconomic analysis included in the draft EIS acknowledges that the economy is changing but then fails to estimate the costs to these sectors of the economy from proposed oil and gas development. Please analyze, quantify, and discuss the negative impacts to the regional economy from energy development. Please examine and quantify the net impacts, not just the gross positive impacts from oil and gas drilling.

Response:

Changes in recreation from energy development in JMH are considered in the analysis of alternatives.

Comment:

The draft EIS acknowledges the importance of nonlabor income, which includes investment income, dividends and rent, and retirement income, to the regional economy. In fact, if retirees and investment income were classified as an industry, it would be the number one industry in the study area and in most western states. The forces attracting retirees to Wyoming and other western states are largely based on sustaining our environment and quality of life. It is therefore important to fully evaluate the negative impacts of a rapid expansion of oil and gas production on a region's natural amenities and, hence, the potential negative impacts on retiree and investment income. Consider, for example, the negative economic impacts when a company drills gas wells on ranchettes owned by retired couples. If the drill rig goes in, despite objections of the landowner, and causes the couple's quality of life to decrease, the couple might move and take a significant chunk of a county total personal income with them. Please analyze and quantify the negative impact of oil and gas drilling on other sectors of the economy, including retirees and service sector employees. Once again, the net impacts from each alternative must be evaluated in the economic impact analysis.

Response:

Demographic trends for this area do not support the notion that the in-migration of retirees is occurring in any significant manner. Moreover, it is not expected that the gas development proposed within JMH would have any significant negative impacts on private surface owners. Thus, it is not expected that gas development would have significant negative impacts on retirees in the area.

Comment:

Amenity-based development is bringing new workers and service businesses to the west. The supplemental draft EIS acknowledges the importance of the service sector to the regional economy. Jobs in the service sector are often mischaracterized as those of burger flippers and maids. However, many of the fastest growing jobs in the service sector are high-paying jobs in business, health, and engineering services. These jobs are increasing, in part, because people are moving to Wyoming because it is a nice place to live. Please analyze the negative impact to the service sector from oil and gas drilling. Surveys have showed that service workers want to live in a nice place with a clean environment. Sustaining our environment and quality of life is, therefore, a prerequisite to sustaining our economy. If oil and gas development degrades our environment and decreases our quality of life, however, these businesses may move someplace else. The bottom line is that the BLM needs to carefully assess the net impacts of from oil and gas development, taking into full consideration the potential negative impacts of oil and gas extraction on other, perhaps more important, sectors of the western economy.

Response:

There are many reasons that individuals move to a particular area. Amenities such as climate, employment opportunities, healthcare, infrastructure, and environmental factors all play a part. Economic trends for this particular study area do not support the notion that high-paying service jobs are being created in the economy as suggested by this comment, and it is not expected that the proposed development would discourage individuals from moving to the area.

Comment:

Most economists agree that economic diversity is key to healthy communities. With this in mind, please discuss how the proposed alternatives will promote economic diversity. Economic diversity indices are often used to estimate the change in diversity from proposed actions. Please include an analysis of county-community economic diversity using the Shannon diversity index, for example, to measure the health of local communities and how that health might change with gas drilling.

Response:

Management actions proposed for JMH support multiple activities, which help to support various industries in the economy.

Comment:

Page 4-161: I/O Model fails to include Fremont County economic and recreation data. The BLM uses the three-county area of Sweetwater, Sublette, and Fremont as its base for determining the regional economy, but relied on an I/O model that excluded Fremont County. This is unacceptable. An I/O model for the three-county study area is not difficult for most regional economists to generate. The BLM does acknowledge that "There may be certain businesses located in Fremont County that are not represented in Sublette and Sweetwater counties," but they only mention livestock auction and implement dealers and not the large outdoor education/outfitter and guide businesses that are predominant there. Please expand the economic analysis to include consideration of the outdoor recreation-outfitter-guide business in not

only Fremont County but also surrounding counties. Please examine employment trends for recreation-based businesses in the 3 county study area, especially Fremont County.

Response:

The number of hunting and fishing outfitters that actually use the JMH CAP planning area and originate within the study area appears limited according to information obtained from the Wyoming Board of Outfitters. For instance, according to their directory 21 outfitters operate in hunt areas that correspond to the JMH. Of these outfitters, two operate solely on private lands, four originate from Fremont County: two originate from Sweetwater County, and the remaining thirteen originate from outside the study area.

Comment:

The draft EIS estimates for dispersed recreational activities were only estimated using the Rock Springs database, and did not include the Fremont County office figures which may have provided better information regarding outfitter/guide use in the northern sections of the area. Please repeat the recreation and socioeconomic analysis, including recreation data from Fremont County.

Response:

The JMH CAP planning area is part of the Rock Springs Field Office and data on all recreational activities occurring in the planning area are kept at this office.

Comment:

Page 4-162, Table 4-13: Please discuss the economic data from COHVCO that was used to estimate economic impacts for OHV use. Was the COHVCO data collected in the three-county study area? What was the study area used in the COHVCO study? Was the COHVCO study peer-reviewed? Was the study published in a journal? Please state the assumption of the study. Please state the explicit and implicit assumptions used by relying on the COHVCO study to estimate economic impacts in the three-county study area. Did the study break out expenditures by resident and nonresident? Did the COHVCO study estimate expenditures by RVD? How were OHV RVDs estimated?

Response:

For all recreational activities, expenditures data were taken from previous studies that evaluated the activities of interest. This is because that no primary data has been collected for JMH. OHV expenditures were estimated with information from a study completed by Hazen and Sawyer for the Colorado Off-Highway Vehicle Coalition in 2001. This study estimated resident and nonresident expenditures for OHV use in Colorado using a household mail survey in 2000. The study was peer reviewed and is being considered for a journal article. Survey data was used to estimate itemized expenditures per day for OHV recreators for overnight and day trips. OHV RVDs were estimated with the RMIS database.

Comment:

Page 4-163, Recreation: Please display in a table and a graph the historic recreation data used in the analysis. Please discuss and display the data used to estimate expected trends in hunting, and recreation visitation. Please also discuss and display the data used to estimate a 2.5% annual increase in OHV use. What methods were used to estimate the OHV trend?

Please explain why OHV use was estimated with a three-year historic average while antelope and mule deer hunting were estimated with a five-year average.

Response:

BLM used the best available data to estimate trends in recreational use in JMH. This included the RMIS database that provides the number of recreational visitor days by activity for 1998 to 2001. Because the data was not available on an annual basis, trend analysis was not possible. Consumptive recreational use data was obtained from the WGFD that has data on annual hunter days per year per hunt area. Thus, trend analysis was possible for hunting activities. Increases in nonconsumptive uses, including OHV, were based on experience and expertise of BLM staff using the best available data and information.

Comment:

What about the economic impacts from other forms of outdoor recreation? Please discuss the assumptions used to estimate the economic impacts associated with hiking, camping, biking, bird and wildlife watching, fishing, and other activities that occur in the study area. How were recreation trends from these activities estimated? Please display in tables and graphs the historic recreation data from the RMIS database for all recreation activities that occur in the three counties in the study area.

Response:

Please see above comment. Additional discussion on the RMIS data used to estimate recreational trends has been provided in Appendix 16 of the final EIS.

Comment:

Page 4-164: Average gas production was assumed to follow historic trends. Please state the explicit and implicit economic assumptions that go along with this assumption. Are they reasonable assumptions? Please display and graph the historic oil and gas production data for the three-county area. Have gas production levels been stable over the last 20 years? Or does production rise and fall depending on price? If past production has been cyclical, does the supplemental draft EIS analysis assume that production will also be cyclical in the future? If not, why not? What impact does price instability have on the analysis and the results? If the draft EIS assumes stable production, what is the justification for such an assumption? Please discuss and analyze past gas production trends and annual variation in gas production.

Response:

The assumption that future gas production will follow historical trends was made for comparison purposes only. In this particular case, the assumption was used to put into context the magnitude of increased mineral taxes resulting from gas development in JMH.

Comment:

Appendix 1, page A1-6: Criteria for selecting preferred alternative. "...has the BLM considered the potential of those lands for occurrence and development of energy and mineral resources?" The BLM acknowledges in the draft EIS that economics-extraction costs and market prices - play a big role in the amount of the gas resources actually developed. Please discuss how economics was used to evaluate gas potential. Please explain the economic data used to classify lands as having low, moderate and high mineral potential. Since development of gas resources is dependent on economic criteria, please explain why economic criteria, such as drilling and transportation costs and market prices, were not used when estimating the gas potential in the study area. Please explain how ignoring economic criteria, including economic constraints on gas production, does not overestimate development potential of an area.

Response:

BLM has considered the potential of those lands for occurrence of oil and gas potential. BLM also provided options for drilling directional wells in certain areas of the planning areas to tap into the reservoirs without occupying the land surface resulting from restrictions. If an operator drills a well and the rate of production is 50MCF/day and the price of gas is $2.20/MCF, then it is not economical to produce that well or drill additional wells in the areas with low potential production as above. The oil and gas development potential areas that was prepared for the Green River final EIS RMP (USDI, 1996) was used for determining the potential areas. However, because of the availability of additional information from the time of this publication, potential areas were modified. Factors used in determination of potential areas are geological analysis of the existing data from USGS publications and database, survey of industry interest in the area, evaluation of existing drilling and production data in the area, and development potential reports.

Evaluation of initial potential areas of oil and gas occurrences is not dependent on the transportation and drilling costs at this stage of evaluation. These boundaries are based on information gathered and interpretation of the data. Most likely, high potential areas have proven production data. However, in the detail evaluation stage, and possibly on drilling of exploratory wells/wildcats and evaluation of potential reservoirs, operators interested in the area will evaluate true potential. At that time, these factors will be considered in economic evaluation calculation. In addition, drilling and transportation cost determination are the responsibility of the operator, not the BLM.

Please see Appendix 13 "Introduction to the fluid mineral planning process" for a discussion of the evaluation process for oil and gas potential.

Potential mitigation costs, transportation costs, and water quality mitigation costs can vary considerably and may depend on well location, individual restrictions being imposed, ease of access to transportation networks, and market conditions. A description of how these types of restrictions affect the oil and gas resource is presented at 4.8.

Section 4.8.1 provides the number of wells that will be economic to produce (new wells placed on production) and those that will not be economic to produce for each alternative. Table 4-15 presents resulting revenues for each alternative. Additional analysis does not appear to be appropriate.

Comment:

Appendix 13, Hydrocarbon Occurrence and Development Potential Scenarios: Please discuss and display data used to describe the market conditions and extraction costs used by Stillwell (2002) in developing the RFD. Please also discuss all the assumptions used in the Stillwell analysis.

Response:

The subject report has been summarized in Section 4.8 and Appendix 13 of the supplemental draft EIS. Please see the subject report for additional details.

Comment:

Page A13-2, Assumption of stable commodity prices that are favorable for continued oil and gas development: Please discuss and display historic commodity price trends and annual variation in prices.

Response:

The subject assumption was made to prepare Table 4-15. Assuming a stable future price is a standard assumption used to project future revenues, maintaining that stable price over time allows the reader to understand the relative revenue differences among the five alternatives presented.

Comment:

Have commodity prices been stable in the past? If not, what is the justification for assuming stable prices in the future? What data were used as the basis for the assumption of stable prices in the future? What is the rational for assuming stable commodity prices when they have not been stable in the past? What impact does price instability have on the analysis and the results? Please discuss and complete a sensitivity analysis of the impact of price instability on gas development potential.

Response:

In general, commodity prices are very stable. However, because of unusual weather conditions in certain year, it may change as a result of high demand. In addition, all economic calculation is based on stable price values with the addition of the inflation factor.

The oil and gas industry prepares its exploration and production activities based on stable economic factors (e.g., price) rather than an inflated or exceptional values. Unstable price indices are not used for future exploration and production activities because this scenario will cause certain companies to go bankrupt.

Comment:

Page A13-13: Please discuss the economic assumptions, parameters, costs, and market conditions assumed and used in the WYGS gas report. What prices and costs were used to estimate the potential gas resources?

Response:

BLM recommends the author review the WSGS Report independently. However, the average prices used by WGS are an estimated $20 to $25/bbl for oil, and $2.25 to $2.75 MCF for gas (see Demand and price considerations, page 20). Please see the subject report for a description of the analysis made by the WSGS.

Comment:

Page A16-7, Table A16-7: Conventional wells were assumed to average 9,000 feet in depth. What data were used to estimate average depth? Was data for the depth of undiscovered deposits used and analyzed? If not, why not? Please analyze and display the depths of all the undiscovered gas resources on a play-by-play basis? Please expand the analysis to estimate the costs for drilling gas resources based on the depth of each resource play. Drilling costs increase nonlinearly with deeper deposits (deeper deposits costs much more to drill than shallow deposits). Please discuss and analyze the impact of drilling costs for deeper deposits on the economic development potential of those resources.

Response:

Please see "Well Elevations and Depths" description on pages A13-8 and A13-9. This information, along with information obtained from industry sources and the use of 23-year oil and gas experience of the responsible staff geologist in Wyoming, was used to make this assumption about average well depth.

The USGS has published only parts of its new assessment, and a drilling depth by play was not available at the time the final EIS went to print. Additional analysis of well depth does not appear to be appropriate. An ability to predict the depth of each future well is not possible. Rather, the ability to present reasonable assumptions about the positive and negative impacts that can be expected from an average well allows the reader to make comparisons between the five alternatives presented.

Comment:

Page A16-9–Recreation: Recreation RVDs were separated into resident and nonresident use. This is a very important step given that the economic impact I/O analysis only accounted for expenditures from non-residents. Please discuss the assumption, parameters, and methods used to separate resident use from nonresident use for all recreation activities. Was any data collected in the RMRIS database that indicates place of resident? How were nonresident hikers, campers, anglers, etc., estimated from RMRIS data? Please complete a sensitivity analysis to estimate the impact of these methods on the economic impacts.

Response:

RMIS database does not include information on place of origin for recreators visiting the Rock Springs Field Office (including JMH). Thus, BLM staff using their knowledge and expertise on recreational use in the area estimated the percentage of visitors and nonvisitors using JMH for recreational activities. The percentage estimates for both residents and nonresidents used to estimate economic impacts will be provided in Appendix 16 of the final EIS.

Comment:

The draft EIS states that observations by BLM staff were used to estimate residents from nonresidents for each recreation category. Please present the results of the separation. Please discuss and display the data used by BLM staff to make this estimation. Please display RMRIS data and discuss the results for each recreation activity. What percent of the hikers, campers, bikers, birders, hunters, anglers, and OHVers were assumed to be residents and nonresidents? This is important information to display and understand given the economic impact analysis. Please estimate the impact of these ad-hoc adjustments for residents and nonresidents on the results. Please conduct a sensitivity analysis to see how the ad hoc allocation of visitation days to the resident-nonresident categories affects the results for the economic impact analysis.

Response:

Additional information on assumptions and data used to estimate recreational impacts is provided in Appendix 16 of the final EIS.

Comment:

As a nation, we consume 22 TCF each year - meaning that all the vitally important wildlife, cultural, aesthetic, and historical resources are being jeopardized for decades of oil and gas production that will supply us with just eight days of natural gas. Nowhere in the supplemental draft EIS has BLM analyzed this aspect: whether eight days of natural gas is worth the impacts. This is troublesome since BLM tells the public at A16-15 that it could preserve this oil area and buy back all existing leases for under $5 million. While BLM in chapter 4 has roughly calculated federal, state, and local revenues from royalties and taxes, the agency completely failed to address the above multiple use criteria about not necessarily managing for the greatest economic output. In addition, BLM has made no effort to quantify the value brought to state and local economies from tourism, recreation, and hunting and how those dollars may be impacted when it allows the Red Desert to become an oil patch. Lastly, BLM has made no effort to try and assess or quantify the traditionally "noneconomic" values associated with vitally important cultural, historical, and religious sites that are prevalent throughout the planning area. In short, BLM has narrowly

selected a range of alternatives that mostly seek to derive the last dollar out of this region for its oil and gas reserves.

Response:

BLM is only required to conduct impact analyses for management within the established planning area, not on a national level. Page A16-15 does not estimate the cost of lease buy-back; it details what was originally paid for all leases. The economic contribution of recreational activities in JMH was considered for all alternatives, and associated impacts are discussed in Section 4.12 of supplemental draft EIS. Additional information on cultural resources has been added to Chapter 3 of the final EIS.

Comment Number: 100,458

Comment:

The number of actual mining related jobs might have decreased, but the earnings per person in this field have increased.

Response:

Additional information on earnings per job is provided in Section 3.9.3.2 of the final EIS.

Comment Number: 100,452

Comment:

(From the transcript of testimony given at the public meeting in Laramie on May 7, 2002, regarding the JMH CAP and supplemental draft EIS)

From what I have heard and what I have read of the existing assessments that have been done of the total environmental costs for additional development in the Red Desert and particularly the Jack Morrow Hills area, those assessments are woefully inadequate to reveal the long-term and cumulative costs of those added developments. So, my request is simply that the public servants who are responsible for managing the Jack Morrow Hills more thoroughly evaluate all the costs that would be involved with additional hydrocarbon development there before they finalize any development plans.

Response:

Chapter 4 of the supplemental draft EIS discusses overall impacts to each resource program from management activities within the planning area.

Comment Number: 200,209

Comment:

It is important that all the costs (including possible losses of the hard to evaluate wildlife, recreation, scenic, and other quality of life values) and all the benefits be considered. It is also imperative that all the costs be considered in national as well as regional and local contexts. Hence you must look at the jobs, revenue, and hydrocarbons that could be produced under your various JMH alternatives (and the total risks of those production scenarios) in comparison to the other possible sources of hydrocarbons in Wyoming (such as the Powder River Basin CBM) and across the nation (e.g., the National Petroleum Reserve Alaska, or the Arctic National Wildlife Refuge). With such a review, some energy reserves will stand out as "crown jewels" of our energy heritage. Others will clearly be lower priority developments because of their commanding competitive values (e.g., historic, wildlife, scenic), lower energy/economic

returns, or both. In this context, then, how do the 5 JMH alternatives you have outlined stand up? According to the language in the supplemental draft EIS (in quotes), the differences between the alternatives in terms of jobs created "would not be considered significant relative to threshold values" of the local area. The differences in earnings "would not be considered significant" because the annual increase in earnings from the most aggressive alternative (#1) "would be well below the significance criteria," and the reduction in earnings from the least aggressive alternative (#2) "falls well within the threshold values." The whole range of projected royalty and tax revenues between the most and least aggressive alternatives was within the "established thresholds for the area." In other words, the energy and economic gains from even the most aggressive development alternative for JMH would not "significantly" affect even the local economy. The regional and national significance of the alternatives for changing the hydrocarbon extraction procedures in JMH, therefore, must also be considered "nonsignificant." If the benefits to aggressive development in JMH are nonsignificant, what about the environmental and quality of life costs of such developments? Here, the differences between the alternatives appear to be substantial. The bottom line is that implementation of Alternative #2 would provide substantially greater protection for the areas holding the most special, unique, and sensitive values of JMH.

Response:

The preferred alternative provides for a balance of uses and protections for sensitive resources.

Comment Number: 200,146

Comment:

As a resident of Fremont County, finally I urge you to take into account the economics of recreational use of this area. Long-term sustainable tourism and local recreation in this area offers an annual income of some three million dollars to our state; contrast this to the oil and gas industry estimates of maybe a payroll of two million for maybe 25 years.

Response:

The economic contribution of recreational activities in JMH was considered for all alternatives

Comment Number: 200,213

Comment:

The WWF feels that hunting, fishing, and recreation/tourism expenditures were grossly underestimated and/or lacked thorough evaluation and consideration toward the overall economic impact in the Jack Morrow Hills area.

The WWF feels that adequate evaluation of economic contributions to the JMH CAP planning area concentrates on mineral resources while dismissing other important and viable economic impacts as less than significant to this region and state.

The data addressed in the JMH supplemental draft EIS (2003) and the draft EIS JHM CAP (2000) is incomplete and conflicting, significant recreation use and economic data from the northern portion of the JMH CAP planning area are omitted, consumptive and nonconsumptive uses are greatly distorted or not considered, and questionable economic assumptions in the economic analysis are made.

Response:

The recreational use data in the supplemental draft EIS (2003) and the draft EIS (2000) vary as a result of the difference in annual data used to estimate average RVDs. Much of the difference can be attributed to the fact that the draft EIS (2000) used data that included a spike in recreational use in JMH because of the interest in the historic trails during historic celebration years. Other differences in estimates are attributed to changes in trends in recreational use in the planning area.

Comment:

Economic impacts in Table 2-4 (Summary of Impacts, supplemental draft EIS 2003) are not even considered for recreation, wildlife, cultural, historic trails, etc. Economic impacts are only considered for Locatable and Leasable Minerals and are only considered in terms of "adverse" (i.e., economic) impacts should mineral development not be permitted. Adverse impacts to the economies of wildlife, recreation, and tourism with mineral development occurring are not considered.

Response:

The economic impacts associated with changes in recreation were considered for each alternative. The summary of impacts table includes these projected impacts.

Comment:

The most glaring information presented is for recreation use estimates. The supplemental draft EIS (2003) does not distinguish between nonresidents and residents (except to say that residents make up the majority of the hunting use) while in the draft EIS (2000) considerable information is presented between resident and nonresident recreation use, including cost per day spent by users (Table 4-13, Economic Assumptions for Recreation). Interestingly, the definition for resident and nonresident recreation use differs than that defined for resident and nonresident hunting value purposes. Nonresident recreation users are considered those individuals outside the region of the three county areas but can be Wyoming residents.

Response:

The supplemental draft EIS does distinguish the difference between residents and nonresidents for each particular activity. This was important in estimating economic impacts of recreational use. Further information will be provided in the final EIS on resident and nonresident recreational use in JMH.

Comment:

Equally confusing is the assumption made in the supplemental draft EIS (2003) that there is only economic impact with recreation from nonresidents in recreation use. This assumption negates the local economic impact from local recreationists who most likely live in this area because of those outdoor values, including fishing, hiking, four wheeling, etc. Keep in mind, these "residents" who are not considered to be contributing to the economy are from the three county region.

Response:

Regional economic impact modeling (I/O models) evaluates the additional economic activity associated with "new" money brought into an economy. This can occur as goods and services are produced by local firms and exported to entities outside the region (e.g., agricultural products, oil and gas production). In addition, new money can come into an economy as visitors come to the area and spend money. I/O models estimate the additional economic activity that occurs with the new money expenditures. Therefore, nonresident spending is evaluated when determining the economic impacts of recreation.

However, this does not imply that recreational activities are not important to the quality of life to residents in the area.

Comment:

Using the economic data presented in the draft EIS (2000), in Table 3-33 (Net Economic Value of Resident Recreation for 1998 Base Year) resident non-consumptive use brings in an estimated $593,308 annually. By extrapolating that figure based on BLM's five- and twenty-year projections, just the local economic impact from nonconsumptive recreation use can be estimated at $2,966,540 for five years and $11,866,160 for twenty years. And it has been stated in both documents that recreation use is expected to increase (2% annually stated in the draft EIS 2000; and 2.5% for OHV and 2% for recreation use, supplemental draft EIS 2003). These estimates are considerably lower than that provided by the state Economic Estimates (Dept. Tourism, 2002) and by the earlier draft EIS estimates. Using data which is more detailed in the 2000 draft EIS, recreation is shown to contribute significantly to the local economy, regardless of whether it is resident or nonresident specific.

Response:

Net economic value discussed in the 2000 draft EIS represents the net economic value to residents of participating in recreational activities in the planning area. These values shed light on the importance of having these activities for local residents. However, the values do not represent expenditures or money brought into the economy like money spent by outside visitors and thus cannot be compared.

Comment:

For example, the BLM shows that recreation impacts are estimated to increase in recreation user days to 1.18 million recreation days over a twenty-year planning period (page 303; draft EIS 2000). Using the figure presented in Table 4-13 in the 2000 draft EIS, $80.78 is spent per day as a total economic impact from non-consumptive recreation use. Multiply that by the 1.18 million days and the economic impact results in $95.6 million being contributed to the planning area over a twenty-year period.

Response:

The "total economic impact" of $80.78 for nonconsumptive use is being applied to all activities and for both residents and nonresidents. This overstates the economic impact of recreation in the planning area.

Comment:

Recreation use has been defined in the draft EIS (2000) as only nonconsumptive use, yet in the supplemental draft EIS (2003), hunting (but not fishing) has been included in the agency's analysis of recreational use and visitor days (3.4 Recreation Resources) but is not included in the table presented (Table 3-18).

Response:

Table 3-18 represents nonconsumptive recreational use in JMH. Hunting use is summarized in Table 3-20. The title of Table 3-18 (Table 3-21 in the final EIS) has been changed in the final EIS to say "Estimated Annual Non-Consumptive Recreational Visitor Days."

The WGFD verified that JMH is not a popular destination for fishing activities.

Comment:

Recreation visitor days are not tracked specifically for the JMH CAP planning area in the supplemental draft EIS, yet in the draft EIS of 2000, Table 3-27 presents direct economic impacts for a base year for the

Jack Morrow Hills. And again, fishing is not considered in the economic evaluations. This is especially disconcerting since there are several fishing outfitters who use the Jack Morrow Hills area for guided fishing trips. And of the identified five streams in the area that contain fish life, four of them contain cold water trout species (Table 3-39; draft EIS 2000). In fact, the BLM is remiss in "assuming" that very little fishing occurs in the planning area (3.4 Recreation Resources; supplemental draft EIS, 2003). The Rock Springs Chamber of Commerce and the Lander Chamber of Commerce have literature promoting fishing trips within the planning area. There are over 49 permittees with outfitter and guide permits granted from the Rock Springs BLM office that use this area (Rock Springs BLM personnel, May 2003). Types of permittees businesses include horse packing trips, hunting guides, goat packing, fishing guides, rock hounding, wildlife viewing guides, archeological guides, desert survival guides, and general nature guides to name a few. Only hunting has been included in the economic estimates. By not including these additional important business uses and their economic contributions to the economy of this area, the BLM greatly distorts the validity of economic evaluations in this Plan.

Response:

The supplemental draft EIS considered other recreational uses (nonconsumptive) in addition to hunting in the analysis of impacts included in Chapter 4.

The number of hunting and fishing outfitters that actually use the JMH CAP planning area and originate within the study area appears limited according to information obtained from the Wyoming Board of Outfitters. For instance, according to their directory 21 outfitters operate in hunt areas that correspond to the JMH. Of these outfitters, two operate solely on private lands, four originate from Fremont County, two originate from Sweetwater County, and the remaining 13 originate from outside the study area.

Comment:

Using the BLM's methodology for estimating economic value from hunting illustrates the serious flaws. The first flaw is discounting the economic impact that local hunters (those within the Rock Springs area and the three-county regions) have toward the economy. Hunting is a business in this state and has been totally dismissed as such. Hunters (within the three-county region) who purchase hunting supplies, gas, motels, taxidermists, etc., from local hunting or sports-oriented retail businesses or use the services of professional guides and outfitters located within the three-county area contribute to the local economy as well as the states economic profile. Outfitter expenditures have been totally disregarded and should be included in this economic profile.

Response:

See above comment on Regional Economic Impact Modeling.

Comment:

When comparing hunting expenditures, residents and nonresidents are distinguished by their state residency (Wyoming Game and Fish Department) data) in the planning area of the draft EIS (2000), but in the 2003 supplemental draft EIS, residents are identified by their locale within the three-county area. Anyone living outside the three-county areas but who are state residents is not considered in the economic statistics. WWF received a hunter list (February 2003) from the Wyoming Game and Fish Department, which identified 5,000 hunters who had hunted within the planning area in 2002 and included numerous residents outside of the three-county area.

Response:

Wyoming residents that do not live within the three-county study area were considered "visitors." Thus, these in-state residents that travel to JMH were considered in the economic analysis of recreation. The definition of resident and nonresident is consistent to the economic model used to estimate impacts.

Comment:

Inconsistency in evaluating economic data is of concern to the WWF. In the draft EIS of 2000, data is presented in Table 4-13, which reflects how much hunters paid per day to hunt and recreate and in Table 4-14, hunting days were estimated among residents and nonresidents.

Expenditures in Table 4-13 were assumed for both residents and nonresidents to be the same. This is inconsistent with supplemental data presented in the 2003 supplemental draft EIS.

Response:

The draft EIS (2000) used a similar methodology to evaluate the economic contribution of recreation by considering nonresident expenditures associated with recreation. Expenditures listed in Table 4-14 are for nonresidents only.

Comment:

In another example, in Table 4-13 of the draft EIS (2000), it is estimated that a nonresident elk hunter spends $330.69 per day to hunt elk in the planning area. In Table 4-14, hunting days for nonresidents totaled 9,589 for the Short-term Cumulative Outputs over a five-year period under the Preferred Alternative. This results in nonresident elk hunters contributing $3,170,986.41 to the economy of the area over a five-year period. Over the estimated twenty-year planning period, the economic contribution from elk hunters increases to $6,306,258.30 (based on an estimated 19,070 hunting days). This appears to be in direct conflict with estimates received from the Wyoming Game and Fish Department (see Harvest and Hunter Expenditure Attachment). For the year 2001, there were a total of 2,119 hunter days. Using BLM's methodology and multiplying that by 5 years, a total of 10,595 days were spent hunting.

Response:

This is not relevant to the 2003 supplemental draft EIS.

Comment:

A resident hunter, while discounted as contributing to the economy of the area, does indeed contribute to the economic viability of the region. In fact, according to Table 4-14 in the 2000 draft EIS, residents spend three times as many days out hunting than nonresidents. While the draft EIS does not present data on how much a resident hunter spends per day hunting elk, Table 4-13 does present the Net Economic Value of a resident elk hunter as $41.46. Over a five-year period where 36,140 days were estimated to have been used locally by residents, an estimated $1,498,364.40 was spent. Over a twenty-year period (Table 4-16; draft EIS, 2000) $2,972,101.56 is estimated to be contributed by residents. This figure seems out of proportion considering that recreation and hunting days were estimated to increase over the twenty-year period. Determining the number of recreation or hunting days needs to be better reviewed in lieu of statements that are made within the context of the document.

Response:

Net Economic Value is not the same as expenditures used to estimate economic impacts. Please see earlier comment on Regional Economic Impact Modeling.

Comment:

The Attachment presented with this letter illustrates data received on hunting expenditures from the Wyoming Game and Fish Department, based on the years 2000 and 2001. The differences between what BLM has derived (using the WGFD data) and what the WGFD presents is confusing. Even taking the percentage of hunters in the planning area as cited by BLM, the attached table would still reflect higher expenditures. In fact, for the year 2000, it has been estimated that $3.9 million was spent by hunters in the Red Desert/Jack Morrow Hills area, and that number includes sage-grouse hunters-something that the supplemental draft EIS does not consider. In 2001, $2.6 million was spent by hunters. These are significant numbers and need to be realized.

Response:

It is unclear from the table provided what is included in the expenditure data. For instance, if the expenditures represent "total annual hunting expenditures per hunter," the use of these data will overstate the expenditures occurring in the study area. The analysis discussed in the supplemental draft EIS included "trip expenditures" that would likely occur while on a hunting trip to JMH. Therefore, it does not appear that the table is comparable to the analysis included in the supplemental draft EIS.

Sage-grouse hunting was analyzed in the supplemental draft EIS. Table 3-20 provides an estimate of the recreational visitor days attributed to sage-grouse hunting occurring in JMH, which was used as a basis for impact analysis in Chapter 4.

Comment:

The lack of additional economic information from the adjoining and participating counties (Fremont and Sublette) is irresponsible. Livestock auctions and implement dealers are not the only economic contributors to the planning area from these counties.

Response:

The I/O model developed by the University of Wyoming and used to estimate multipliers for the economic impact analysis did not include data from Fremont County. Because the economies across counties included in the model were similar to Fremont County, it was concluded that the aggregate impacts could be estimated in confidence. It is worth noting that even if Fremont County was included in the I/O model, impacts could not be traced to a county level.

A-19.19 ADAPTIVE MANAGEMENT

Comment Number: 100,240

Comment:

Revise the Preferred Alternative to include implementation of an adaptive management and monitoring process with respect to developing reasonable performance-based standards rather than prescriptive mitigation to encourage innovation to deal with changing conditions and new technology.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Standards, limits, thresholds, and similar measures are employed to determine success and

progress in attaining the resource goals and objectives. These "numbers," however, are subject to change based on data collected in the planning area, input from other agencies, and participation of the JMH CAP Working Group. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,332

Comment:

Under the current Preferred Alternative, there is an assumption that by a new "adaptive management process" the area could be further analyzed beyond what has already taken place over the past many years. How can an area be analyzed without a proposed action? BLM has already identified and catalogued the areas of "crucial winter range, calving/fawning, migration corridors, etc." (Page 2-66). Since long-term surface-disturbing activities, "disruptive activity," etc., would be precluded, what would the BLM monitor and evaluate (for about 2 years) to determine if these activities would result in "irreversible adverse effects?" Yates finds it very difficult to evaluate the results of such circular reasoning. Yates believes that an adaptive management process should be applied when a development program has been analyzed under the NEPA process and that the monitoring specific to the proposed action analyzed suggests that some adaptive actions are needed.

Page 2-97, Monitoring Plan Preferred Alternative: When does input from stakeholders and other Publics occur?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,342

Comment:

With respect to the concept of "adaptive management," we are encouraged by the BLM's willingness to embrace the flexibility in management decisions that comes with this concept.

But we did not read in the draft any discussion of how the BLM intends to modify the current inefficient BLM processes of, for example, the appropriate delegation of authority on a case-by-case basis; or streamlining the internal "approved by" signature process to include only those federal employees who have a direct responsibility to a particular project; or specific timelines for project components with incentives to federal employees for quality work accomplished ahead of schedule; or project plans and work schedules tailored to the complexity of a project; or changes in policy on the level of detail and pages of paper necessary to comply with the NEPA, ESA, OHSA, etc, in order to actually conduct "adaptive management in this Field Office.

Until the BLM is willing and able to conduct an internal review of the meaningful changes it needs to make in the way it conducts business with the business world, the concept of "adaptive management" will exist in the Rock Springs BLM office in name only.

Response:

The Rock Springs Field Office is required to follow statutory and policy guidelines in conducting business related to the JMH CAP planning area. The implemented management strategy enhances the decisionmaking process by responding to changes in resource conditions and basing impacts projections on actual observations.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,344

Comment:

I am very concerned with the concept of adaptive environmental management as expressed in this document. It appears to be a way to simply avoid the leasing decision in perpetuity, which is more difficult to deal with than an actual no lease decision. At least a no lease decision could be appealed and considered on its merits.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,345

Comment:

As suggested on page 2-82, it will be absolutely necessary that adequate monitoring of "sensitive resource indicators" be done to help plan for timing and subsequent development.

It is not clear how the Bureau will achieve these monitoring tasks. It is critical that the Bureau have adequate human and fiscal resources to accomplish this work. This commitment should be part of the planning process and should be addressed in the final EIS. The final planning documents should specify who will pay for necessary work to implement key aspects (like monitoring) of the CAP.

Response:

Timing limitations on mineral leasing were part of the adaptive management strategy included in the draft EIS. Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach.

Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Monitoring of resource indicators remains a component of the revised monitoring strategy, and a great deal of time was invested in selecting these indicators (see Table A17-1). The collection of much of the indicator data is part of the day-to-day duties of most governmental agencies or groups. Use of this readily available information has little impact on the need for additional funding or manpower. However, as the discussion in Appendix 17 points out, changes may be necessary or desirable in the choice of indicators or measurement methodologies depending on their effectiveness. It is not possible at present to predict the effects of such changes.

Comment Number: 100,373

Comment:

The key to the adaptive management method for addressing uncertainty in natural resource management being successful is that the BLM must be able to thoroughly monitor results of an experiment in order to make the proper evaluation and adjustments. The BLM appears to be underfunded with regard to monitoring programs (e.g., elk monitoring). If the BLM is to select the Preferred Alternative, it should make certain that it has adequate funding to properly monitor results so that only appropriate and necessary adjustments are implemented.

Response:

Please see response to comment number 100,345.

Comment Number: 100,376

Comment:

The proposed list of resource indicators is too short. It should be expanded to include 1) air and water quality, including compliance with CAA State Implementation Plans and state water quality standards; 2) threatened and endangered species; 3) sensitive species representative of various habitat types in the planning area; 4) significant heritage resources; 5) reclamation success; and 6) invasive weeds and exotic species.

Response:

Many of the resource indicators are part of the indicators shown in Appendix 17 in Table A17-1. Others, particularly outside the planning area, are being observed by agencies (such as the Wyoming DEQ) and the data is available for use by BLM. The management strategy described in Appendix 17 has been heavily modified based on review of public comments, agency direction, and new information but the importance of field observations remain. Please refer to the updated version of the appendix in the final EIS for details.

Comment:

We are unclear how the proposed monitoring plan (Appendix 9) relates to the adaptive management process (Appendix 17). It would seem the monitoring plan should be part of the adaptive management process, yet the elements being monitored in the monitoring plan do not necessarily correspond with the "Resource Indicators" of the adaptive management process. For example, the monitoring plan does not include sage-grouse, while the adaptive management process does. We recommend sage-grouse presence/absence/relative abundance be included in the monitoring plan.

Response:

The relationship between Appendix 9 and Appendix 17 monitoring efforts has been clarified in the final EIS.

Comment:

It is critical to note that protecting biological diversity can only be dealt with appropriately at the planning level. Habitat fragmentation, connectivity, and other factors affecting biological diversity are inherently landscape-level considerations. The project level is simply too small a scale for adequate exploration of impacts to the health of large ecosystems. For this reason, the JMH CAP itself should establish specific, binding limits on road densities and other habitat disturbance that cannot be exceeded in the planning area. This is the only way to ensure biological diversity is preserved and that ecosystem attributes are not "nickel and dimed" to death by individually small but cumulatively significant site-specific projects.

The supplemental draft EIS frequently discusses the ability of wild ungulates to withdraw from habitats affected by energy development and occupy alternative habitats. BLM should reveal the locations of these "alternatives" and describe their ability to meet the habitat requirements of ungulates driven from preferred habitats. Alternative habitats are likely already used to some degree by wildlife and will be unable to supply the needs of additional animals for any extended period of time. BLM should presume increased conflicts with existing uses on these alternative habitats.

Response:

As part of the NEPA analysis of the Preferred Alternative, the impacts of anticipated surface activities were considered employing the best available data. This provides at least some guidance for what are acceptable and unacceptable limits. However, setting "binding limits" does not recognize that established standards may not be applicable to the planning area.

In addition, the strategy for implementing JMH CAP planning decisions is included in the revised version of Appendix 17, which provides management strategies to resolve conflicts between wildlife habitat and resource use. Please refer to Appendix 17 in the final EIS for details.

Comment:

The adaptive environmental management process included in BLM's Pinedale Anticline Record of Decision has been a miserable failure. BLM implemented the development components of the management strategy but failed to monitor and address the impacts of that development. Here, BLM acknowledges a lack of site-specific data on many nongame species. Without that baseline data, how can BLM make any determinations about the impact of its decisions on the ecosystems on the Jack Morrow Hills?

Response:

BLM disagrees with your assessment that the adaptive environmental management process included in BLM's Pinedale Anticline ROD has been a failure. This adaptive management process is still in the initial stages and BLM has identified working groups and methods to collect needed information and incorporate that information to future actions. The structure is in place for monitoring and BLM will continue to obtain data and apply the adaptive management process for the Pinedale Anticline area.

However, for the JMH CAP planning area, proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach.

Monitoring of resource indicators remains a component of the revised monitoring strategy. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,377

Comment:

The adaptive management strategy is described only in general terms in Appendix 17 of the draft EIS. Order and timing of removal of lease suspensions are not provided. There are no indicators, monitoring plans, decision trees, nor mitigation measures specified for plant species of concern. Without this information, there is no way to evaluate impacts, and this EIS therefore fails its most basic purpose, to study environmental impacts and provide a meaningful comparison of alternatives. More significantly, because decisions are deferred to adaptive management and case-by-case consideration, it is impossible to evaluate the impacts on botanical values. Compounding the problem, the proposed adaptive management strategy is vague with few specifics.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,379

Comment:

We have heard that there is not nearly enough money in your budget for the monitoring that is Adaptive Management. We fear that you may draw personnel from their regular tasks to do the paperwork, etc., that would come with mineral development, as has happened in other BLM resource areas in the State. If so, you will fall behind because, as we understand it, adaptive management is very much of the moment. You will not have the fresh data to direct adaptation.

Response:

Please see response to comment number 100,345.

Comment Number: 100,383

Comment:

Throughout the document, BLM refers to the concept of an "adaptive management process" being implemented under the Preferred Alternative. EnCana does not support the adaptive management process that has been outlined by BLM because it is misapplied under the principles of this type of process. BLM's process would result in mitigation and compliance requirements that are to be determined at some unspecified later time while leasing and development decisions continue to be delayed. BLM's process does not address the need for funding and manpower requirements. The implementation of any adaptive management process is unacceptable until BLM can demonstrate to the public that it actually has the resources to follow through in its commitment to manage with this approach.

EnCana recommends that BLM reevaluate its recommended adaptive management process and recognize that it thwarts the free-market system by continuing to delay land management decisions unnecessarily.

BLM must identify and secure the necessary resources, including personnel, to manage an adaptive management process.

This Alternative amounts to an unfounded mandate that results in the JMH CAP planning area becoming an area to be managed as a research project with no forced timing on when any conclusions would be reached. BLM's strategy forces a process for gathering data, developing an implementation strategy, a monitoring program, and a 12-point evaluation procedure, but does not identify the need for or create the funding or human resources to accomplish any of this. The adaptive management process would indefinitely close all activities in as much as two thirds of the project area while the evaluation program proceeds. The process develops a long list of triggers for closure of activities and essentially subjects companies to every possible permutation of conditions, which must be assessed before activity would be allowed. This process is unmanageable.

EnCana strongly opposes this Alternative. EnCana recommends that a much more reasonable approach for an adaptive management process is to base it on performance-based requirements at the time a project-specific proposal is analyzed. For instance, an areawide population objective for sage-grouse could be set, monitoring implemented to assess area-wide population trends, and new or additional mitigation prescribed if the objective is shown to be at risk.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,384

Comment:

The proposed adaptive management strategy (Strategy) is impractical in that assurances that the program will be funded in a manner to ensure its success do not exist. First, potential monitoring costs of the strategy should be disclosed to permit the public and BLM to evaluate the potential financial impacts of this alternative relative to the other alternatives. BLM should also include in the analysis a discussion of the potential impacts should funding not be available to BLM to carry out the monitoring contemplated by the Strategy. Further, the Strategy, if adopted, should be revised to provide a mechanism for release of the lands within the planning area for development should the monitoring efforts fail.

Because of the vagaries of federal funding, BLM should, at a minimum, have a workable option available to it in the event BLM is unable to secure the funding necessary to implement the Strategy.

Response:

Please see response to comment number 100,345.

Comment:

Employment of "resource indicators" is an impractical proposition for wildlife monitoring, in that it is uncertain when and if sufficient and scientifically valid baseline information will be available. In the absence of such information, development and leasing within parts of the JMH would be indefinitely delayed, as future decisions regarding development of oil and gas in parts of the JMH CAP planning area are dependent upon the measurement of change from the baseline. Therefore, it is imperative that

baseline conditions be measured accurately. To be valid, the scientific community must agree on the baseline conditions. It does not seem likely that such an agreement will be forthcoming in the near future, thereby jeopardizing the underlying premise for the Strategy. An example of the lack of adequate baseline information for wildlife can be found in the Green River RMP.

APC believes that establishment of scientifically valid and agreed upon baseline conditions will be a daunting and expensive multiyear task, thereby initiating delays in implementation of future JMH CAP management decisions. BLM cannot simply elect to state that conditions as they exist at the time the ROD is signed represent baseline conditions. Analysis of valid data that may or may not exist over a period of time is necessary to have statistically valid information on which to base the Strategy.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Although monitoring of resource indicators is a component of the new strategy for implementing planning area decisions, it would not delay such decisions. Please refer to the updated version of Appendix 17 in the final EIS for details.

Though a good baseline is helpful, one is not needed to adequately manage the planning area. Consider that there are two possible states of a resource when monitoring begins: healthy or unhealthy. Now consider the collection of resource data in the presence of land use activities. Consecutive periods of indicator data will reveal either a change (positive or negative) or no change. In either beginning state, a positive or negative trend in a resource indicator toward a desirable or undesirable outcome may trigger BLM action. (In the case where performance standards have yet to be established, the trigger will likely be the magnitude of the change.) The same is true if the indicator data from consecutive periods does not show an impact. The whole idea behind resource indicators is to detect actual impacts. Baseline information is more useful in determining how far the initial conditions are from a goal or threshold. Understanding the magnitude of an allowable change in an indicator provides guidance on the scope of a management action, not whether it is taken.

Comment:

The Strategy's premise is that by monitoring changes in wildlife "resource indicators" within the JMH CAP planning area, land managers will be able to determine positive or negative effects of oil and gas exploration and development. Restricting the evaluation of changes in wildlife resource indicators to within the JMH CAP planning area ignores the realities of natural systems. Treating wildlife populations as if they were confined to the JMH CAP planning area and never subject to land management or other influences occurring outside the area is unreasonable. How does BLM propose to monitor and account for outside influences on parameters associated with wildlife resource indicators? Influences such as land management practices (BLM, FS and private lands) outside the JMH CAP planning area, drought, migration of big game outside planning area, etc. Taking these into consideration will require additional monitoring. Again, BLM should address the long-term funding for costs of additional monitoring strategies occurring outside the JMH CAP planning area in order to fully evaluate the potential impacts of the option.

Success of the Strategy is predicated on answers to, as of yet, unanswered questions. BLM anticipates that many of these answers will only be available after the record of decision is signed. For instance, as previously indicated, what constitutes a significant change in a resource condition? How will conflicts in monitoring information be resolved (elk populations are rising but elk distribution has significantly

changed)? Are determinations for desired road densities to be equally based on wildlife habitat needs and soils? How will BLM ensure adequate monitoring of environmental factors outside of BLM's control? Will BLM accept studies/monitoring data from other areas that can be extrapolated to the JMH CAP planning area (e.g., BLM/UW Sage-Grouse/Oil & Gas Interaction Pinedale Study)? With the lack of information presented in the Appendix 17, uncertainty as to the eventual development of the oil and gas resources is further aggravated.

BLM questions in Appendix 17 if "an area of 2 miles around nesting sage-grouse prevents abandonment in all cases." Does this question intimate that industry may be faced with dynamic stipulations and mitigating measures? In terms of stipulations or mitigation measures approved via either the JMH CAP ROD or the Green River RMP ROD, what happens when information shows that standard to be wrong? Does BLM anticipate that should monitoring information indicate if a change in a mitigation measure or stipulation is needed that it will amend or revise the JMH CAP or RMP?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

It is necessary to examine data from inside and outside the planning area to evaluate the success of management decisions. The updated Appendix 17 in the final EIS contains a discussion on indicators and their use.

By scrutinizing all available indicator data, management decisions can be seen to have positive, negative, or no change on the associated resource or resources. This in turn provides a measure of effectiveness in meeting the management goal and objectives, and indicates a direction for further refinement of the existing management policy. Considerable time was invested in selecting the resource indicators (see Table A17-1) for the monitoring strategy. However, as the discussion in Appendix 17 points out, changes may be necessary or desirable in the choice of indicators or measurement methodologies depending on their effectiveness. Indicator monitoring uses current conditions as a baseline.

Comment:

Under these conditions, it appears that there will be no end game for the oil and gas industry to have enough certainty that a large enough block of land will be made available for leasing to warrant investment in exploration projects. The proposed Strategy is akin to a race where there is no finish line. The Strategy will define the resource indicators that are to be monitored but there are no fixed values for determining when adequate proof has been presented to open additional lands to exploration, leasing or development. APC believes that it is unlikely that the oil and gas industry will make investments under such a regime.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

BLM states that "draft guidance is not used in land use plans." APC would like to bring to BLM's attention that Appendix 17, Table A17-1, references the "Draft Interim Management

Guidelines for the Greater Sage-Grouse and Sagebrush Steppe Ecosystem for BLM Administered Lands in Wyoming." As with draft planning guidance documents, the proper time to incorporate them in a land use plan is after they are finalized.

Response:

Appendix 17 has been updated to include a more traditional approach to implementing land use decisions.

The referenced draft interim guidelines have been removed from the updated indicator table in Appendix 17 of the final EIS.

Comment Number: 100,432

Comment:

Under the Preferred Alternative, oil and gas leasing is considered based upon industry interest and monitoring of sensitive resources utilizing an "adaptive management strategy." Although the intent of the BLM's adaptive management strategy is good, the specifics and details of implementation are not addressed. The JMH CAP process has been lengthy, and this strategy will most certainly result in additional time consuming to-be-determined mitigation and compliance requirements. CAMX does not agree with the Preferred Alternatives provisions which continue to defer leasing decisions in JMH.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Numbers: 100,433; 100,440

Comment:

Appendix 17 states that the monitoring plan will adapt management of the area to achieve the stated goals and objectives. However, the stated goals and objectives (p. A17-2) are so vague and broad that they provide no legitimate guidance to the decision-maker for determining whether the goals and objectives have been achieved. Appendix 17 also states that the monitoring plan will accurately monitor and predict cumulative impacts through BLM's maintenance of a geographical information system, including all activities such as natural gas production, recreation and grazing on federal and nonfederal lands and how those activities are affecting resources. What is the likelihood of this monitoring system being implemented? Has such a system ever been employed on BLM lands?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Please refer to the updated version of Appendix 17 in the final EIS for details.

Monitoring of resource indicators has numerous standards backing up the review process. Appendix 17 discusses the indicators and their use. In general, as data become available, the relative and responsible individual reviews it. If unacceptable or unexpected changes are detected, a further analysis takes place to identify the cause or causes. This effort may include consultation with persons responsible for other indicators to help narrow the possible culprits. If the cause is within BLM control or affects current land-use decisions, management will be involved to address developing issues. In addition, periodic reviews of the management practice and current indicators will be performed.

Numerous specific GIS databases are maintained by BLM. For the most part, the results of monitoring effort need only be combined into a JMH specific project.

Comment Number: 100,443

Comment:

Planned actions, analysis, and further action or readjustment characterizes adaptive management. Further, adaptive management should start at a much greater level than simply the lease or activity site.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,455

Comment:

While we support the concept of adaptive management, we only do so when management actions are on hold or avoidable based upon the results of monitoring, an aggressive inspection, an enforcement and monitoring plan is established with appropriate funding and personnel, appropriate stakeholder groups and the scientific community are given a meaningful voice to participate in the monitoring and proposed changes as a result thereof, specific guidelines are provided on how to take monitoring results and tailor those to management decisions and a system is established for reinitiating NEPA studies when subsequent monitoring reveals impacts not previously disclosed or assumptions relied upon that prove to be incorrect. The adaptive management plan proposed meets none of these criteria.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

On page A17-1, BLM admits that the extent and nature of mineral reserves and types and locations of oil and gas development are all unknowns.

The supplemental draft EIS contains a detailed description of the speculative nature of use, exploration, and development in the planning area. Based on the limited use, exploration, and development that has

taken place to date, it is impossible to predict how future development will proceed. In particular, the extent and nature of mineral reserves in the planning area are unknown and are expected to remain so for several years. All agree that there is a great deal of uncertainty about future development. Because of this uncertainty, a number of assumptions were necessary to predict the impacts associated with future development. Those assumptions may or may not be correct.

Given these admissions, the key question up front is how much development is permissible pursuant to NEPA, FLPMA, NHPA, and the MLA to test these assumptions and gather data?

This stark and candid admission as to pure guesswork in the supplemental draft EIS means that BLM has failed the Park County test of taking a hard look at the preleasing impacts of oil and gas development. How can BLM justify making an irreversible and irretrievable commitment at the leasing stage with all of these questions unanswered and assumptions untested? As such, we expect BLM to provide in the final EIS and Record of Decision that there will be subsequent NEPA analyses prior to any leasing occurring, and not Documentation of NEPA Adequacy forms, as those just relate back to the lack of analysis in this EIS. In the alternative, all leases must be conditional and subject to buy-back or cancellation, as proposed by the 1989 National Academy Science report on land use planning and leasing, or in the existing framework, all leases should be NSO. Further, given the NEPA "look before you leap" requirement, all APD approvals must be very limited, and as discussed above, must be preceded by project level NEPA analyses to provide the detail lacking in this EIS.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

The anticipated results of oil and gas leasing and development decisions included in Appendix 17 were analyzed as part of the Proposed JMH CAP of the final EIS in compliance with NEPA. Project-level NEPA analysis is part of every land use decision. The management strategy described in Appendix 17 does not reduce the importance of this NEPA review. The field data and observations actually enhance the value of the produced EA or EIS documents by better projection of anticipated project impacts.

Comment:

On pages A17-6, 7 BLM provides the bare framework for a monitoring plan, and admits that no such plan has been developed. Importantly, BLM states, "Prior to implementation of the JMH CAP adaptive management strategy, the BLM team will complete the following six items." Thus, BLM has added another level of NEPA study and review - the management and resource specific adaptive management plans that are to be established prior to allowing any resource use - grazing, oil and gas leasing or APD approvals, OHV use, etc. By not doing this now and over the past years in the current EIS process and by admitting that it needs to be done to set up the monitoring plans to test all of these guessed at assumptions, BLM has appropriately delayed all resource uses until the appropriate plans are developed. Indeed, BLM properly admits that no future activities in the JMH CAP may be authorized until the monitoring plan is in place: "After the initial implementation phase of the adaptive management process (about 2 years), a determination would be made on whether or not areas may be made available for consideration of future activities" (supplemental draft EIS at p. 2-67).

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Although monitoring of resource indicators is a component of the new strategy for implementing planning area decisions, it would not delay such decisions. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

Map A17-1 is a mess - a complete management migraine. The many shades of gray and many overlays make this map far from readable or comprehensible. Importantly, however, the map fails to show which areas are both closed to leasing and closed to development on existing leases. Obviously, with over 230,000 acres already under lease, BLM should provide the public with a map of those areas in this context - to compare how existing leased areas are located in terms of areas closed, open and phased-open to leasing and development. The map is also deficient by not indicating which leasing (existing) and areas open to leasing would have which stipulations (CSU, seasonal timing, NSO). BLM also fails in this supplemental draft EIS to explain the reasons why different areas are receiving different levels of treatment. BLM then goes on to say, "Initially, . . . some suspended leases in the planning area would be reinstated, and others would remain in suspension, or new suspensions would be implemented" (supplemental draft EIS at p. A17-4).

Response:

Appendix 17 has been revised to include a more traditional approach to implementing decisions within the planning area. Please refer to the updated version of Appendix 17 and Figure A17-1 in the final EIS for details.

Comment:

It is not clear how BLM will handle complaints from industry about suspending activity on existing leases. BLM has not analyzed the potential for contractual rights issues arising or drainage obligations and other situations. Second, BLM has in no way described which areas in category one will receive priority in terms of APD approvals and new leasing proposals, or how adaptive management will be applied to those areas. In addition, BLM has not made it clear how and if information from those areas will be applied to future decisions on categories two and three. Regarding category two, the same concerns abound, with the additional issue of how will BLM decide which areas become available for future leasing. BLM vaguely refers to acquired monitoring information, but ignores potential drainage situations, changing demand and economics, new technologies, and other related factors. In fact, the entire adaptive management program described here by BLM, and particularly the phasing in of new leasing, means that BLM will necessarily need to supplement its NEPA based on monitoring results.

40 C.F.R. 1502.9(c)(1) provides that a new EA or EIS will be required when BLM has obtained new information or learns of new impacts/circumstances that will have bearing on or are relevant to environmental concerns. Where has BLM mentioned how it will carry out its many layers of NEPA duties for phased-in leasing; will it be for each lease sale, for each nominated parcel, by geographic area after monitoring results are complete? Lastly, category three - not even located on the map - suspends all activity on existing leases and all new leasing in this area. How will BLM implement this portion with no activity; on what will it base its adaptive management?

BLM has failed to describe how existing suspensions will be lifted. Lease suspension seemingly applies only to category three, as that is the only area that initially stops all activity on existing leases. However, BLM states "nominations for new leases within the planning area would be considered on a case-by-case basis" (supplemental draft EIS at p. A17-4). Which areas - categories one, two, or three - will receive priority in terms of new leasing? Category one allows new leasing - is it to be phased here as well? Category two stops new leasing in the "short-term." - how is that defined by BLM? Category three also allows no new leasing, – but it is still open to lease proposals in the same fashion as the other two areas on a "case-by-case basis." BLM needs to provide direct guidance and criteria for how, where, and in what fashion lease suspensions will be lifted and phased leasing in all three categories may occur.

BLM has also provided conflicting statements about the nature of lease suspensions and phased-in leasing. The criteria and process for the lifting of lease suspensions should be fully fleshed out and better explained. For example, on one hand, the BLM states that "Leases will be held under suspension until indicators show acceptable effects or a positive response of resources to development..." (supplemental draft EIS at p. A17-3), yet goes on to state "Existing lease suspensions will end with the signing of the record of decision for the JMH CAP." (supplemental draft EIS at p. A17-4). Moreover, this fictional protection of lease suspensions and phased leasing over time quickly evaporates when the reader comes to realize that, "At anytime, activity proposals could be submitted for any portion of the JMH CAP area, with proposed mitigation to address the issues and sensitive resource needs." Environmental security in the area is further eroded by the fact that, "Lifting of lease suspensions and nominations for new leases within the planning area would be considered on a case-by-case basis using the adaptive management strategy." What the foregoing statements say to us is that no area of the Jack Morrow Hills CAP area is off-limits to oil and gas leasing and development activities. Please reconcile these facially contradictory statements.

BLM has also failed to describe in any fashion whatsoever how and why it divided the JMH CAP into these three categories. BLM suggests that the lands in category two, for example, are appropriate for new development on existing leases, but are not appropriate for immediate new leasing. Why? What was the rationale used. How did this rationale used result in different answers to these questions for categories one and three? How do the lands and resources in category three differ from those in category two - adding the extra layer of protection on continued suspension of leases in addition to no new leasing? We believe BLM has the legal authority to control the timing and sequencing of development and leasing (see, e.g., standard lease term section 4), but BLM must provide a written basis and record of how and why it is making these decisions and treating seemingly similar lands and resources in such a significantly different manner. For instance, we strongly believe and maintain that the wildlife, vegetation, aesthetic, historical and cultural resources throughout the entire planning area deserve permanent category three status. Therefore, it would have been helpful to the public for BLM to provide a rationale of why and what criteria formulated the decision to divide the planning area into these three categories.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The adaptive environmental management process designed by BLM for the Pinedale Anticline EIS/ROD was a complete and utter failure. Among its many problems, the BLM implemented the development aspects of the decision, approving dozens of wells and other project-related facilities and activities, while

refusing to implement the adaptive management process. Why should the public have any confidence in the BLM to get it right this time? What is different about this effort? What steps will BLM take to ensure that the adaptive management process is implemented?

Response:

BLM disagrees with your assessment that the adaptive environmental management process included in BLM's Pinedale Anticline ROD has been a failure. This adaptive management process is still in the initial stages, and no conclusions can be made at present.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

As the BLM learned from its experience with the Pinedale AEM process, the Federal Advisory Committee Act imposes substantial procedural requirements on federal agencies such as BLM that invite recommendations and advice from citizens. How does BLM intend to implement the public participation plan of the proposed adaptive management strategy in a manner consistent with FACA?

Response:

Please see the section on communication and participation in the revised version of Appendix 17 in the final EIS.

Comment:

The supplemental draft EIS states (at A17-1), "it is impossible to predict how future development will proceed." This statement is nonsense, and impossible only if BLM acts in the usual and customary laissez faire style of management. BLM possesses a full range of regulatory authority sufficient to control and limit the pace, location and level of development in a manner that is consistent with valid existing rights and protection of the environment. Through a combination of lease suspensions, lease stipulations, conditions of approval, monitoring, mitigation measures and other mechanisms, the BLM has the ability (and legal authority) to assure that future development on existing leases does not conflict with or adversely impact other uses and resource values. If BLM is to succeed in preventing adverse environmental impacts, "predicting" and controlling the location, pace and overall level of development in the Jack Morrow Hills area is absolutely essential. Why isn't BLM proposing to do so?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

In the introductory paragraphs of Appendix 17, the BLM identifies and discusses six specific steps involved in developing and implementing an adaptive management strategy. During the planning stage, the "management plan and monitoring program are designed." A17-1. "Once the planning stage has been

completed, the program is implemented and monitored using protocol developed in the planning stage." Id. Questions: 1) What is the protocol that will be used? 2) Where in the preliminary implementation strategy is it printed?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

As noted earlier, the Preferred Alternative is the only alternative to adopt an adaptive management approach. The other alternatives displayed in the supplemental draft EIS simply contain a "monitoring plan" (supplemental draft EIS at 2-8). Please explain why adaptive management was not integrated into any other alternative? Given the obvious environmental advantages associated with properly designed and implemented adaptive management, omitting it from the other alternatives seems to have prejudiced their consideration. Was this done intentionally to compel selection of the Preferred Alternative?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Alternative 3 still includes adaptive management.

Comment:

The supplemental draft EIS states (at 2-66) that "the adaptive management strategy would apply to all land and resource programs in the Preferred Alternative" yet the emphasis of the strategy is clearly focused on oil and gas development. Indeed, the discussions in Appendix 17 sections entitled "Purpose and Need," "Approach," and "Management Actions" address only oil and gas, to the exclusion of all other resource programs. While we don't disagree with the focus on oil and gas development, given the severe impacts that can result, why hasn't an adaptive management implementation strategy been developed for other resource programs, activities and actions that may cause adverse environmental effects?

Related to the paragraph above, the Preliminary Adaptive Management Implementation Strategy (Appendix 17 at A17-4) states, "Other activities will follow the same process." What process is that? The process or "approach" outlined for oil and gas is necessarily specific to oil and gas and "focuses on the timing and sequence of oil and gas activity" (A17-4). For those reasons, this "process" does not appear to be directly transferable to other resource uses. Specifically, how will adaptive management be applied to activities such as livestock grazing, recreation, mineral development, access, and realty, etc.?

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and

field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The list of monitored "resource indicators" (Table A17-1) should be expanded to include 1) air and water quality, including compliance with CAA State Implementation Plans and DEQ water quality standards; 2) threatened and endangered species; 3) sensitive species representative of various habitat types in the planning area; 4) significant heritage resources; 5) reclamation success; 6) invasive weeds and exotic species.

Response:

Please see response to comment number 100,376 and the revised Appendix 17 in the final EIS.

Comment:

The JMH CAP, specifically the section, entitled "Monitoring and Evaluation," fails to identify, discuss, and meet the monitoring requirements that are most applicable to this planning process: BLM's own regulations for monitoring and evaluation contained in 43 CFR §1610.4-9. The specific monitoring plan promised in Appendix 17 for "each resource indicator" (A17-7) should be included in the final EIS for public review and comment, not deferred to some unspecified future date, which almost guarantees it will never be completed. In addition, the monitoring plan must, under the rule cited above, include specific intervals and standards. Although the adaptive management strategy proposes yearly reviews of monitoring data, it lacks standards. What, specifically, will BLM view as an "acceptable effect" or "positive response of resources" (A17-3)?

All of the "additional steps prior to implementation" listed on page A17-7 should be completed as part of this planning process, included in the final EIS for public review and comment, and adopted as an integral, binding and enforceable component of the Record of Decision. Is that the BLM's intention? If not, how does the BLM intend to involve the public in the development of the "additional steps," which we assume will be developed after the issuance of the ROD?

"It is generally agreed that there is no way to eliminate human presence and disturbance from the area, however, once disturbance reaches a certain threshold, impacts are expected to become significant. Further study and monitoring are needed to determine what the threshold is for the planning area" (supplemental draft EIS at 4-81). NEPA requires the kind of hard look that would determine such threshold levels of disturbance prior to the approval of developments. Until credible analyses are performed to at least estimate what level of development will exceed this critical threshold, the BLM has no business approving a management plan for the Jack Morrow Hills.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 200,201

Comment:

IPAMS recognizes that the concept of adaptive management could be a useful tool in the planning process, if implemented correctly. IPAMS supports specific performance based guidelines to ensure that project proponents fully understand the expectations at the time a permit is issued. We do not agree with adaptive management that is unspecified or to be determined management. This can lead to delays and further complication of compliance.

In addition, IPAMS is skeptical of the work group system that has been used in the past with adaptive management. These work groups often involve individuals who hold very little technical or environmental knowledge. Any work group associated with adaptive management must possess a scientific and working knowledge of any issue being addressed.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 200,212

Comment:

BR supports the principles of adaptive environmental management; however, currently in Wyoming there appears to be three different approaches employed. BLM must agree upon and utilize a single template so that interested parties have an understanding of what the process entails. Performance-based parameters should be utilized as they encourage innovation and embrace changing conditions and new technological advancements. Monitoring must be a critical component in measuring the effectiveness of these parameters. BR recommends that AEM and the related performance-based parameters be specific enough for the project proponents to fully understand the expectations at the time of permit issuance. Unclear and unspecified parameters, mitigation and monitoring causes serious difficulties for project proponents in terms of scheduling, unanticipated costs, and uncertainty.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 200,223

Comment:

PLA objects to the staged leasing and development proposal contained in the Preferred Alternative. While BLM refers to this as "adaptive management," it appears to be a ploy to further undermine the development of the Jack Morrow Hills study area. Despite years of planning in this area, BLM is still unwilling to make appropriate land use decisions. Furthermore, the concept of adaptive management was never intended to be used as a means to avoid making land use decisions. Instead, it is meant to provide

land managers with flexibility while allowing land uses, including oil and gas development, to proceed without unnecessary delays. Such flexibility would be accomplished through the use of performance standards rather than highly prescriptive mitigation or limits on activity.

According to the Council on Environmental Quality (CEQ), adaptive management is a process that should be used to evaluate the effectiveness of certain assumptions by experimentally comparing different management practices. In fact, it is intended for agencies such as BLM to deal with uncertainties related to the effectiveness of prescribed mitigation measures by identifying causes and effects of management decisions through monitoring. Information derived from monitoring would provide BLM cause for adjusting its management approach through consultation with the land user. All changes in management must be contingent upon valid existing lease rights. That is not to say, however, that BLM cannot work with operators in order to arrive at mutually agreeable solutions to problems. In a nutshell, adaptive management is intended to allow the agency to permit certain activities to occur while monitoring their effects and making adjustments accordingly rather than relying on inexact guesses as to what could occur as a result groundless suppositions.

One of our greatest concerns is that BLM's plan contains no assurances of funding its purported monitoring. Without full funding, staffing, and specific objectives, all attempts at developing a reasonable adaptive management process are destined for failure. These failures will not only jeopardize BLM's management plans, they will cause serious delays and needless constraints on multiple use activities, such as development of energy resources.

Staged leasing is not adaptive management. Moreover, it is certainly unwarranted given the fact that BLM has failed to identify specific goals and objectives with respect to what it wants to accomplish by this untenable management approach. One stated rationale for proposing staged leasing is to protect the Steamboat desert elk herd. The proposed plan is clearly extreme because the herd has continued to thrive in the area, despite the drilling of approximately 300 wells in the past. In fact, the herd has flourished to the extent that the Wyoming Game and Fish Department (WGFD) has indicated its intention to increase the original target population from 500 to 1,200. Ironically, PLA understands that the herd actually exceeds 1,200 and is closer to 2,000 to 2,500 head. Clearly, oil and gas development has had absolutely no impact on the elk. We urge BLM to revise its proposal by taking into account the favorable condition of the herd.

Response:

As part of the NEPA analysis of the Preferred Alternative, the impacts of anticipated surface activities were considered employing the best available data. This provides at least some guidance for what are acceptable and unacceptable limits. However, setting "binding limits" does not recognize that established standards may not be applicable to the planning area. In addition, please see responses to comment number 100,433.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

A-19.19 MONITORING

Comment Number: 100,379

Comment:

We assume that you have a budget, reliable over the next two decades, which will guarantee that you will be able to implement your plan. Do you have enough personnel to monitor in all areas? Can you afford adequate supplies for restoration?

Response:

BLM will be pursuing numerous opportunities for acquiring funding to implement the JMH CAP. Some parts of the JMH CAP implementation will be fairly routine and not involve any additional funding or staffing from what BLM currently receives. Other portions will require additional budget needs, whereas others have been funded in the past, such as the elk study. BLM is identifying these funding needs and including them in our budget documents for next fiscal year.

Comment Number: 200,162

Comment:

With any plan, success depends on monitoring and mitigation. I feel the BLM is a little lax in this part. My comment would be to make sure the IDT is involved yearly to evaluate the success or failure of all the parts.

Response:

The success of management strategy for the planning area will depend on the cooperation of all stakeholders. As stated in the section on communication and participation in Appendix 17, coordination between the various governmental entities and the public will be encouraged in the development of the resources in the planning area.

A-19.20 GOVERNMENTS AND AGENCIES

Comment Number: 100,220

Comment:

The BLM has systematically provided for lesser protection for Native American cultural and spiritual sites than for other resources in the Red Desert or even with similar non-Indian cultural resources. The BLM fails to provide the necessary agency support for study and identification of these important sites, as it does for other resources. In the limited protections provided (100 ft. buffer zone), the BLM has failed to recognize the distinct differences in fragility, sacredness, and importance of Native American sites. Each type of site will require a varying degree of protection, instead of a one-size fits all approach. With tribal consultation, the BLM should devise a ranking of protection strategies that will fit with the variety of sites that exist. Strong protection standards should be defined for site types, even for those yet unknown, so that at a minimum, disturbance is avoided prior to further analysis.

The BLM fails to protect the viewshed of the Indian Gap Trail, the Boars Tusk, other respected features, and the composite of the sacred landscape of the Red Desert. Even though very limited in information (and recognizing that only 2% of the lands have been surveyed for cultural resources), the BLM report presents a picture of a landscape with a rich and phenomenal number of Native American traditional cultural and religious sites. To ensure the future protection of the sites known, as well as those yet

undiscovered, the most protective strategies to preventing land disturbance must be instituted, far beyond Alternative #2.

The agency's Preferred Alternative is unacceptable as a plan for protecting Native American sites, due to all the failures noted above. These include insufficient buffer zones, VRM classifications that are weak and allow too much disturbance to the visual landscape, lack of agency resources for study and identification of these resources, poorly devised "adaptive management process" that fails to provide up-front protection, and failure to protect the overall landscape of the area. The VRM classifications should be increased for the entire area to classes I and II, which BLM states, "would have beneficial effects on visual quality of historic resources and Native American 'respected places.'"

Communication sites should be limited on high points, which the BLM acknowledges, "would help protect heritage resources from physical and visual impacts."

The entire JMH CAP planning area should be closed to further oil and gas and mining exploration and development. Existing leases should be bought or not renewed when expired. Preventing these significant land disturbing activities throughout the area is the only way to ensure future protection for Native American sites currently known and those for the benefit of future generations-Indian and non-Indian alike-far outweighs the minor and short-term mineral potential of the area. The BLM report states that this "would have an overall beneficial impact on heritage resources by eliminating these surface disturbance activities."

The agency should invest additional resources in study, consultation with tribes and elders, identification of traditional Native American sites, and the development of special protective designations for a range of sites so as to ensure the highest level of protection for these Native American cultural resources. Agency enforcement should be increased to ensure that poachers of artifacts are deterred or prosecuted.

Response:

The "100-foot avoidance" measure is a minimum standard that comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7) where it applies only to sites eligible for the NRHP under Criteria D. Both the BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity in which a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. If consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

These viewsheds are managed by appropriate VRM designations. If an activity is proposed within the area of these features, it would need to be in compliance with the appropriate viewshed designation. In some cases, it may be appropriate to use VRM processes and GIS viewshed technologies to analyze and achieve compliance with the VRM classification. When application of these measures is appropriate, the measures will be used.

BLM considered the option of closing the planning area to new fluid mineral leasing; however, this option was dropped from detailed analysis as described in Section 2.1.3.3 of the supplemental draft EIS.

The option to pursue buyout or exchange leases in sensitive resource areas with willing sellers was analyzed under Alternative 2 of the supplemental draft EIS. Buy-back and/or exchange of existing producing leases within the planning area was also considered but dropped from detailed analysis as described in Section 2.1.3.8 of the supplemental draft EIS. BLM also considered the option of prohibiting oil and gas exploration and development activity on existing leased areas but dropped this option from detailed analysis as described in Section 2.1.3.7 of the supplemental draft EIS.

Closing the entire planning area to mineral exploration and development was analyzed under Alternative 2 in the supplemental draft EIS, but was not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy. Less restrictive measures were determined adequate to protect lands and resources in the planning area. The Preferred Alternative in the supplemental draft EIS and the Proposed Plan in the final EIS recommend a balance among uses in the JMH CAP area.

Comment Number: 100,221

Comment:

Shutting off all options to current and future production of oil and natural gas in JMH CAP planning area is not good responsible planning. The tax base in the State of Wyoming and in Sweetwater and Fremont Counties are made up of primarily mineral tax assessments. Government, schools, and recreation, as well as jobs and the local economy depend on mineral production for their livelihood. Options must remain open for responsible production and use of our public lands to provide revenue to pay for the services demanded by the citizens surrounding the public lands.

Response:

The supplemental draft EIS analyzed several management options, from a full development alternative to a preservation alternative.

Comment:

The preferred alternative adopts an Adaptive Management Strategy calling for the extractive activity to be aggressively monitored for the effects on the surrounding environment. Congress must adequately appropriate funds to the BLM so that proper monitoring can take place. However, industry's investment should not be jeopardized because of inadequate funding of the monitoring process.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Indicators were selected to provide the information needed to make sound management decisions, but the availability of current and the potential of collecting future data was also considered. Collection of much of the data does not depend on outside funding. A great deal of data is obtained from existing sources and is routinely gathered as part of the duties of the agency or BLM. Those cases in which additional funding or manpower is needed have successfully secured resources to carry on today. There is no reason to believe this will not continue. In addition, review of the value of the indicators and the collected data is part of the techniques discussed in Appendix 17. Therefore if it were shown that necessary information was not being obtained, steps would be taken to either correct this problem or find an equally valuable substitute.

Comment:

As oil and gas leases expire and are due to be renewed, companies that have practiced sound environmental exploration and extraction should be given more opportunity to produce. Sound environmental practices should be rewarded with timely renewal, not bogged down with legal maneuvers, rules, and regulations that have no scientific basis.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,334

Comment:

In this Draft, oil and gas activities and domestic grazing were lumped together under "development." There is a difference in the two activities as oil and gas activities encompass are source, which, once it has been extracted, is nonrenewable and at some point will come to an end. On the other hand, domestic livestock grazing utilizes a renewable resource that has been sustainable for more than 100 years and will be able to continue indefinitely.

Response:

In the supplemental draft EIS, some livestock range improvements are referred to as developments. However, it is well understood that these improvements are wholly different from mineral developments. Even though, in some cases, the term "developments" is used to describe both of these activities, they were not addressed or analyzed in the same manner.

Comment Number: 100,335

Comment:

In the last paragraph on page 2-10, the word "reduction" should be replaced with the word "changes" and the word "shorter" with the word "changed." This paragraph deals with rangeland and riparian habitat for management actions that are common to all alternatives. As noted above, changes in management practices afford the opportunity to enhance rangelands and environmental and grazing values. BLM range managers should have the flexibility to manage these resources in the best interests of the environment and livestock production, and this may result in an agreement to reduce or increase animal unit months, or a decision to shorten or lengthen unnecessarily narrow selection of possibilities. This management flexibility should be common to all alternatives.

Response:

The language "shorter grazing periods" has been replaced with "modified grazing periods" in the final EIS. However, the language "reduction of AUMs" (supplemental draft EIS, page 2-10 and 2-106) was retained in the final EIS. If livestock grazing is determined to be a factor of not meeting the "Wyoming Standards for Healthy Rangelands," then increasing animal unit months would not be an appropriate management change. This paragraph lists several tools that could be used to help make progress in meeting the "Wyoming Standards for Healthy Rangelands." The type of appropriate action taken is determined through the consultation process and coordinated with the livestock operators.

Comment:

Regarding the wording for "fences" for the preferred alternative, we recommend the following wording for the first paragraph: "Where documented wildlife conflicts with fencing on public lands occurs, these fences would be modified or reconstructed, or, if necessary, removed."

This change is requested in recognition of the recent advances that have been made in the types of fence materials and construction. Because of these advances, fence modification or reconstruction is normally more practical and cost effective and therefore far more preferable than the alternative of replacing removed fencing with herding.

Response:

The text has been changed in the final EIS to reflect this comment.

Comment Number: 100,336

Comment:

The Preliminary Adaptive Management Implementation Strategy (Appendix 17) must be clarified and rigorously pursued. While we conceptually support the Adaptive Management strategy, we are concerned that the document does not make clear how the process will be funded or staffed. Without these key elements, the strategy will not succeed. We are also skeptical of the integrity of the process under political and/or economic pressure. Our support for the Preferred Alternative is based on assurances that the Adaptive Management process will be followed faithfully.

It is our understanding that previous gas field development EIS documents have included monitoring plans. With the increasing emphasis on field development in Wyoming, it may be timely to look at the results of these monitoring plans and utilize the findings or alter monitoring techniques to fill data gaps. We believe this ongoing monitoring may be key to the development of a workable adaptive management plan.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Considerable time was invested in selecting the resource indicators (see Table A17-1) for the monitoring strategy. In addition, the collection of much of the data is part of the day-to-day duties of different governmental agencies or groups. Use of this readily available information has little impact on the need for additional funding or manpower. However, as the discussion in Appendix 17 points out, changes may be necessary or desirable in the choice of indicators or measurement methodologies depending on their effectiveness. It is not possible at present to predict the effects of such changes.

Comment:

The entire issue of how sage-grouse are to be managed under the Preferred Alternative should be reexamined. While Section 3.1.6.2.2 adequately summarizes the current situation for sage-grouse, the Preferred Alternative fails to change the status quo of management actions, which have contributed to the tenuous position sage-grouse now occupy. In addition, Section 4.4.6.6 of Chapter 4, Environmental Consequences, oversimplifies and underestimates the impacts.

The BLM should expand the analysis of this issue. While we certainly do not believe the available data indicate sage-grouse qualify for listing under the Endangered Species Act, the long-term population trends throughout the bird's range and within the JMH CAP planning area suggest the need for a change in management direction to avoid the potential for listing.

Response:

BLM has reviewed pertinent greater sage-grouse literature and is continuing to evaluate new information. BLM is also addressing the Director's Greater Sage-Grouse Conservation Strategy, and has provided clarification in the final EIS relating to management of greater sage-grouse. The effects of activities within the planning area and Green River Basin on the greater sage-grouse have been reevaluated in Chapter 4 of the final EIS.

Comment:

In light of this decline and the range-wide concern for sage-grouse, we request the BLM consider the following comments specific to sage-grouse:

Leks. We recommend the ¼ mile CSU currently in the preferred alternative be changed to ½ mile. Activities up to ½ mile of lek sites are usually within sight and sound of leks and are likely disruptive to breeding activity. The document states in Table 2-2 (p. 2-167) that the ¼ mile restriction only impacts 3,530 acres (6/10 of 1 percent) of the 574,800 planning area. Increasing the protective restriction to ½ mile, or implementing the Alternative 3 approach, would still not be a large proportion of the area. To mitigate this increased level of protection for active sage-grouse leks, we recommend those leks that have now been documented to be inactive (for a period of 10 years or more) be removed from the maps. There are several of these leks, and we would be willing to meet with the BLM staff to identify these locations and have them removed from the lists and maps.

Response:

BLM's management for greater sage-grouse habitat is discussed in the Proposed JMH CAP portion of Chapter 2 and Appendix 6 of the final EIS. BLM is currently evaluating data presented by the WGFD on locations of active greater sage-grouse leks and comparing it with their own; however, because of timing restrictions, these data will not be presented in the maps of the final EIS, but will be used as part of the monitoring strategy of the Proposed JMH CAP.

Comment:

Nesting Habitat. The document states in Section 3.1.6.2.2 that most successful sage-grouse nests are located beyond 2 miles from lek sites. If this is the case, there are no protections provided for sage-grouse in what may be the best nesting habitat. Ideally, the protections would be based on mapping of suitable habitat rather than the more simplistic distance radius, which has been the status quo for many years. The radius approach leaves out good nesting habitat and includes what may not be nesting habitat. The current approach allows for exceptions to the 2-mile stipulation if nesting does not occur. However, there are no provisions to allow stipulations where nesting occurs outside the 2-mile radius. This is not a balanced approach.

Response:

BLM agrees that all nesting habitats should be protected and has provided a 3-mile seasonal protection for nesting habitats in the Proposed JMH CAP with the stipulation that all avoidance areas and seasonal limitations would be evaluated and determined on a case-by-case basis.

Comment:

In Table 2-1 on page 2-116, there appears to be an inconsistency for the dates of seasonal stipulations for sage-grouse. In one location, it states the dates are February 1-July31 and in another February 1-June 30. The June 30 date would be acceptable if the above request for protections outside the 2-mile radius were enacted.

Response:

BLM has changed these dates in the final EIS to more adequately reflect strutting and nesting periods for the greater sage-grouse in the planning area.

Comment:

Winter Concentration Areas. These areas appear to be defined by points rather than an area.

This approach is not biologically sound. Sage-grouse winter ranges are not point specific, as with lek sites. Rather, the birds move through the range similar to big game, utilizing resources as conditions (snow depth) allow. We recommend the maps, analysis, and management alternatives reflect sage-grouse winter range areas rather than specific observation points.

Response:

Information regarding BLM surveys of greater sage-grouse wintering areas has been added to Chapter 3 of the final EIS. The map identifying winter concentration areas has been updated in the final EIS to reflect your comments.

Comment:

The argument that elk populations have grown in spite of oil and gas development being in the project area for decades is invalid. While elk numbers have grown in areas where well/road densities are low (or non-existent), research conducted in the area by the University of Wyoming has demonstrated that elk avoid areas where well/road densities are high (e.g., Nitchie Gulch). Elk numbers have grown because most of the planning area does not (yet) have high densities of wells/roads.

Response:

The BLM concurs that elk may be avoiding the Nitchie Gulch area because of higher levels of mineral development; however, no concrete conclusions can be drawn that well/road densities associated with mineral development in the Nitchie Gulch area are a direct cause for avoidance by elk because there is no predevelopment documentation of elk use in the Nitchie Gulch area. The Nitchie Gulch area is primarily an active sand dune. The study by Powell (2002) concluded that elk selected against this habitat type during most of the year.

Comment:

Table 3-20, Estimated Annual Average Hunting Days: The estimates for pronghorn hunting in Area 92 and mule deer in Area 131 are too low, based on both animal and hunter distribution. We estimate the JMH portion of these hunt areas support 70 percent of the pronghorn hunting in Area 92 and at least 60 percent of the mule deer hunting in Area 131. The 58 percent (pronghorn) and 22 percent (mule deer) were apparently estimated by area rather than animal/hunter density estimates. These errors affect the economic analysis as well.

Response:

The WGFD revised estimates of annual average hunting days for pronghorn and mule deer in Table 3-20 (Table 3-23 in the final EIS) to reflect the percentage of hunting in JMH as reported. The changes in hunting days are also reflected in the economic impact analysis in the final EIS.

Comment:

We support Alternative 2 in terms of defining the Steamboat Mountain ACEC boundaries due to the importance of this area to birthing and wintering elk and mule deer, as well as the location of the rare basin big sagebrush/lemon scurfpea vegetation type. During cooperator meetings, our Department proposed a 23,000-acre area on the top and flanks of Steamboat Mountain be protected through a NSO stipulation. This area included many overlapping sensitive resources (e.g., sensitive plants, steep slopes, visuals, elk calving, mule deer fawning, elk crucial winter). We continue to support this proposal.

Response:

BLM has recognized the importance of these resource values by proposing protection measures for areas in which they occur throughout the planning area. Please see the Proposed Plan in the final EIS for an update of management actions for this area.

Comment:

We are unclear how the proposed monitoring plan (Appendix 9) relates to the adaptive management process (Appendix 17). It would seem the monitoring plan should be part of the adaptive management process, yet the elements being monitored in the monitoring plan do not necessarily correspond with the "Resource Indicators" of the adaptive management process. For example, the monitoring plan does not include sage-grouse, while the adaptive management process does. We recommend sage-grouse presence/absence/relative abundance be included in the monitoring plan.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

The relationship between Appendix 9 and Appendix 17 monitoring efforts has been clarified in the final EIS.

Comment Number: 100,338

Comment:

The collective effect of the described use prescriptions and restrictions make it very hard, if not impossible, to responsibly manage State Trust lands for income generation for our beneficiaries, as prescribed by our Trust obligation. Congress granted the State of Wyoming certain lands upon admission into the Union, in surface and minerals for the benefit of Wyoming institutions, principally the common schools. In short, these lands were intentionally granted and accepted for the specific purpose of income production. However, as evident from the Jack Morrow Hills situation, the rights to manage these lands for income producing purposes has been restricted, confined, and subsequently diminished by virtue of juxtaposition to federal lands managed for multiple use.

There are 37,440 state-owned mineral acres within the Jack Morrow Hills area, of which 7,720 acres are under federal surface. Although we may be considered "small players" with only six percent of the total acreage, the decisions represented to cover only BLM surface, with the caveat that "surface management decisions may have some affect on the ability to manage the non-federally owned minerals, the CAP decisions will not pertain to the nonfederal mineral estate. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the CAP," tends to severely diminish our potential to garner more than grazing income from these properties. The supplemental draft EIS goes on to state, "The CAP will not include any management decisions for areas where the land surface and minerals are both privately owned or owned by the State of Wyoming." This statement seems to directly contradict the previous statement noted and has little practical relevance, whereas here mineral lessees cannot independently access land-locked State minerals in the area where the EIS is to be effective.

Chapter 2, Table 2-1, indicates access will be guaranteed under the FLPMA guidelines, and indicates the conditions surrounding the potential for access, but there is no assurance, outside this tabular rendition, regarding that guarantee. Past experience has demonstrated that no such guarantee exists. State lessees are subjected to rigorous federal standards for road construction, site development, and all wildlife, endangered species candidates and cultural requirements. When federal lands surrounding the State parcel are large by comparison, require development to be held, provide the potential to drain other nonaccessible or highly problematic accessible properties, and require significant dollars to be spent in preparation to develop, the incentive to drill State lands is significantly diminished, to say the very least.

The "adaptive management" approach only compounds the already existing problem for State land mineral access under federal lands and for accessing State lands land-locked by federal lands. This approach inherently calls for controlled rates of development dependent on the interpretation of monitoring data by BLM at almost any challengeable juncture in the federal development or surface access areas. It will employ an enormous amount of manpower at all levels and the development of minerals, one of the keys to this State's income base, is diminished and stands to be further diminished by increasing deference to federal multiple use/mandates.

If we approach this circumstance strictly from the Trust perspective, wherein our responsibility is to maximize the State's assets and resources to enhance the trust for the States beneficiaries, our options are not only limited, but yet to be explored. For instance, one option could be for the federal government to issue a ratification statement indicating that the State has the right to develop its lands through unfettered access, subject to appropriate "best practices" mineral/surface management interface, such as roadways, well reclamation, and vegetation restoration. Another option would address the cumulative effect of EIS requirements in that the State should be allowed to be involved in at least a surface acreage to surface acreage percentile of total and ongoing development at any time in the process. In other words, if we do not have a minimum of six percent of the rigs running in the area on State land, and at least six percent of the production issuing from State land, then adjustments to what can be done on federal land should be made. In reality, we would be receiving no less than six percent of the value of all mineral development in the EIS area, with the federal government either deferring to our development needs, or providing us a full six percent of the value of the production on federal lands, adjusted proportionately for the whole of development, this amount being in addition to our fifty percent share in federal minerals. And yet another option would be to assess those lands conflicted (State acres embraced within EIS-restricted areas) and find comparable trades with the federal government for developable land, such exchanges being potentially balanced or augmented by cash or other valuable interests and/or developable lands.

Response:

To resolve the issues with State land in-holding, some creative methods of management need to be considered, such as those described in this comment. An aggressive land exchange process that was once commonplace under former Governor Sullivan may be in the best interest of the public. Lands within WSAs, ACECs, and other areas where access to State lands may be difficult would be the highest priorities. We look forward for further dialogue on this issue.

Comment:

If the State's acreage, much of which is currently under five year oil and gas leases, goes essentially undeveloped because of the cumulative impacts of measured parameters under an adaptive management concept, with attendant costs, the next time these tracts are offered at auction, it is extremely likely that the State will not receive a bid for its properties. All of the leases in this area will be expiring between the end of 2003 and sometime in 2004-2006. If these tracts are not leased at auction, the State will lose the bonus (approximately $1/acre or $40,000) and the yearly rental for the next 5 years (approximately $200,000 at a minimum). Additionally, from the standpoint of development potential, which exists principally for natural gas/gas liquids, the forgone royalty dollars over time will be staggering. The federal government will, of course, also lose such royalty revenue potential, and this too, will affect the State's budget. If the State is forced to succumb to the ramifications of the supplemental draft EIS and its current adaptive management scenario, the State will suffer great losses at the Trust level and the federal income distribution from this area as it relates to mineral development.

Response:

BLM is required to allow access to nonfederally owned land surrounded by public land managed under FLPMA, as necessary, to secure to the owner the reasonable use and enjoyment thereof. Access necessary for the reasonable use and enjoyment of the nonfederal land cannot be denied so long as the compliance with rules and regulations is achieved. Lands can be identified for potential to exchange or purchase because of this concern. We believe that the State of Wyoming is in the position to identify which of its lands may be adversely affected by BLM management of adjacent federal lands. Once identified to us, sales or exchanges may then be investigated on a case-by-case basis.

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

All staff reviews expressed major concern relative to the precedent-setting potential of the adaptive management concept; not only for this EIS, but others in the future as well as those in progress. The lands owned by the State were given to the State specifically to generate income for the benefit of the common schools and other public institutions. When the ability to do so is severely hampered, as will be the case in this instance and possibly others, by the same government granting those lands, it would appear that compensatory offset should occur to the benefit of the State.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and

field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

The success of monitoring resource indicators in JMH will depend on the cooperation of all stakeholders. As stated in the section on communication and participation in Appendix 17, coordination among the various governmental entities will be encouraged in the development of the resources in the planning area.

Comment Number: 100,339

Comment:

The Department of Environmental Quality (DEQ) Water Quality Division (WQD) would like to provide the BLM with any information concerning water quality that may aid in the CAP development process. The discharge and handling of produced water from the oil and gas industry is a specific concern of the DEQ. This concern is based on the large potential for oil and gas development in the area. The DEQ and its staff would like to assist BLM in assessing water resource concerns and developing mitigative measures as needed.

Response:

Produced water will not be discharged onto the surface under any of the management alternatives. DEQ guidelines and regulations will be followed.

Comment:

The DEQ would like to see a cooperative management group formed to oversee CBM development in the Rock Springs Field Office Area. Direct planning and management of CBM development is needed to ensure the needs of both the environmental and CBM industry are met. Specific requirements are needed to allow CBM development to take place at a consistent rate while protecting the many interests in the area. The formation of such a management group is needed for the State of Wyoming to protect its natural resources and allow effective economic growth.

Response:

The DEQ is included in water-related issues, such as those involved in the injection phase of CBNG development. The roles of the state and BLM are clearly defined in policy regarding this issue. Given special situations in which additional support may be needed, such collaboration may be useful. Please see Appendix 17 for information on a proposed working group.

Comment Number: 100,340

Comment:

The adaptive management plan, as proposed in Appendix 17, is an attempt by the BLM to continue to defer decisions regarding land use in the Jack Morrow Hills Area. "Adaptive management" is the NEPA process that never ends. Mineral extraction activities require certainty, in particular for land access, and the adaptive management plan delivers no certainty. This proposal will strongly discourage capital investment necessary for exploration and development.

The loss to the State of Wyoming and affected counties due to unrealized tax revenues, not including sales and use taxes and multipliers from associated economic activity, could be greater than $1.8 billion. Our opinion is that the implementation of the Adaptive Management Plan will have severe negative impacts on the State revenue that could otherwise be realized from this area.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

The WSGS estimates of recoverable gas and revenues were not specifically referred to here because they are estimates of the total resource and its total potential value. They did not estimate the amount of gas and revenues that could be obtained in the 20-year period analyzed for this EIS. Our estimates project only those wells that could be drilled, the recoverable gas resource, and the resulting revenue for each alternative during that 20-year period. Impacts are presented in Sections 4.8 and 4.12 under consideration of a 20-year period.

Comment:

With the degree of uncertainty provided by ongoing NEPA analysis, operators will not be able to perform the conditions necessary for development; there will be little or no exploratory activity.

Response:

The JMH CAP leaves several options open for exploratory drilling. This activity can take place with proper mitigation. Please refer to Appendix 17 in the final EIS.

Comment:

There are over 51,000 acres of State land and Trust lands within the Jack Morrow Hills area. There will be a potential loss to the State Land Trust share of the Jack Morrow Hills petroleum resource base, which is approximately 320 BCF of gas and 19,000 Barrels of Oil. At current severance and royalty rates, the loss to the State Land Trust from State Lands will be $183 million under normal pricing scenarios.

Response:

Please see response to comment number 100,338.

Comment Number: 100,341

Comment:

We support the Preferred Alternative because it balances multiple use and resource and cultural protection. Specific comments that would strengthen and enhance the Preferred Alternative are as follows:

Page A8-3, Volume 2. Vegetation Treatments: The County Weed and Pest Supervisor with the "Interdisciplinary Team" will develop a water-monitoring plan for any riparian treatment area prior to chemical applications. For management purposes, riparian habitat is the onsite vegetation found immediately adjacent and subject to the influences of surface and subsurface waters from streams, rivers, or standing bodies of water.

Page 2-101, Volume 1. Wetlands and Floodplains: Projects to improve the ecological integrity of the dunal ponds would be considered for development on BLM-administered public lands by the Interdisciplinary Team (IDT) (as defined in this comment letter).

Page 2-103, Volume 1. Activity and Monitoring Plans: In conformance with the Green River RMP objectives for vegetation management, a site-specific activity plan would be prepared in conjunction with the IDT (as defined in this comment letter) and implemented for the Divide Basin Wild Horse Herd Management Area to ensure adequate forage is available to support the AML of 415-600 horses. A monitoring program would be developed by the IDT to support wild horse herd management decisions.

Page 2-113, Volume 1. Habitat Management Plans: Habitat management plans would be developed by the IDT (as defined in this comment letter), as needed, for highly developed and disturbed areas to mitigate wildlife habitat losses.

Page 2-145, Volume 1. Lease Stipulations: Monitoring data would be assessed and appropriate management actions would be determined by the IDT (as defined in this comment letter above). Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of non-native species, and recreation activities.

Page 2-130, Volume 1. Transportation Planning: A transportation plan would be developed by the IDT (as defined in this comment letter) for the JMH CAP planning area.

Page 2-130 through 2-131, Volume 1. Transportation planning would provide for access to achieve multiple use goals while providing maximum protection for crucial habitats and sensitive resources. Transportation planning would consider:

- Access restrictions such as seasonal road closures and/or gating to limit frequency of access in crucial wildlife habitat;
- Re-routing or rehabilitating existing roads and trails (subject to county review of existing rights-of-way needs) causing resource damage;
- Local land and resource use plans;
- Concentrating stream and riparian area crossings in key locations to avoid disruptions.
- Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road (and frequency of use). Bridges may be required on Pacific, Jack Morrow, Parnell, and Rock Cabin creeks.

Page 2-137, Volume 1. Land Withdrawals and Exchanges: Exchanges would conform to the JMH planning objectives and actions, including a full NEPA analysis.

Response:

Interdisciplinary (ID) teams are used in a variety of circumstances and in different ways. The planning regulations (43 CFR 1610.1-3(c)) discuss the use of the ID approach for planning documents and of whom they are comprised (the 'team'). It is up to the Field Manager to determine the extent of the IDT and he/she may use "any necessary combination of BLM staff, consultants, contractors, other governmental personnel, and advisors to achieve an interdisciplinary approach." Further, in the regulations (43 CFR 1610.2 and 40 CFR 1506.6), it discusses how public participation is to be accomplished, which is very similar to the use of IDTs in the planning process. Another section in the regulations (40 CFR 1502.6) directs federal agencies to use the interdisciplinary approach in the preparation of environmental impact statements. In that section it states that the "disciplines of the preparers is to be appropriate to the scope and issues identified in the scoping process." The scoping process is described in 40 CFR 1501.7.

Another use of IDTs is in resource management. BLM puts together staff specialists when accomplishing such tasks as developing allotment or habitat management plans, conducting rangeland health evaluations, monitoring resource management plans, performing inventory and monitoring of resource condition and trends, etc. At these times, the BLM coordinates and consults with a variety of interested publics. The composition of the interested publics varies depending on the resource or activity involved. BLM regulations require such consultation and public involvement. They will not necessarily be identified as an IDT as for planning documents, but the process is similar. Important to note is that public involvement is encouraged in all activities. NEPA analysis would be a part of activities such as exchanges. However, only BLM has authority for all decisions made for public land and resource uses under BLM jurisdiction. See the definition of Interdisciplinary Team (IDT) in the Glossary of the final EIS.

Comment:

Page A17-5 through A17-7, Volume 2: Resource indicators should be based on habitat characteristics (measures of plant community, i.e., vegetation), not animal numbers or distribution. Things other than habitat may preclude wildlife from occupying available habitat (i.e., disease, predation, hunting).

Response:

Appendix 17 has been revised to include a more traditional approach to implementing decisions within the planning area. Monitoring of resource indicators is still a component of Appendix 17. Considerable time was invested in selecting the resource indicators (see Table A17-1) for the monitoring strategy. As discussed in Appendix 17 of the final EIS, changes may be necessary or desirable in the choice of indicators or measurement methodologies depending on their effectiveness. It is not possible at present to predict the effects of such changes.

Comment:

Page 2-92, Volume1. Desired Plant Community: Desired Plant Community objectives (based on ecological site description, which is based on soil surveys) for upland and riparian areas would be established for the planning area though individual site-specific activity and implementation planning, and as updated ecological site inventory data becomes available.

Page 2-94, Volume 1. Vegetation Treatments: Areas proposed for vegetation treatment would be restored one full year prior to treatment (unless vegetation cover prior to treatment is adequate) and would be rested the second growing season after treatment, unless an on-site analysis jointly by the BLM and permittees determines this timeframe should be more or less.

All areas where vegetation manipulation occurs would be totally rested from livestock, wildlife, and wild horse grazing for a minimum of two growing seasons, or longer if necessary, to allow for the recovery and reestablishment of key forage species (define in Volume 2, page G-1-14, key forage species here or reference the glossary).

Page 2-98, Volume 1. Fire Suppression: There are places where basin big sagebrush should be burned. An example would be dense stands of old decadent, basin big sagebrush that have replaced meadow types in the bottom of drainages.

Response:

Desired Plant Communities are based on more than an ecological site description. They involve soils, existing vegetation, desired vegetation, and management objectives. See definition of Desired Plant Communities in Appendix 10.

The issue of vegetation treatments and subsequent rest periods has been evaluated in detail between the BLM and cooperating agencies. The language contained in the Preferred Alternative is the BLM preference and based on site-specific analyses. As stated in the supplemental draft EIS, exceptions may be granted when more or less time is indicated by site-specific review, which includes input from interested parties.

Wildlife and wild horses are wild and free roaming animals that cannot be managed in the same manner as livestock. Moreover, use from wildlife combined with that of wild horse HMAs at AML occurs over a large area and is relatively small as compared with livestock grazing use.

BLM agrees that areas exist in which basin big sagebrush should be burned, such as in the bottom of drainages and along roads. However, the basin big sagebrush/lemon scurfpea association warrants fire suppression activities. This unique community is of limited distribution, provides cover for elk, and helps stabilize the sand dunes to prevent blowout areas.

Comment:

We support the preferred alternative because it balances multiple use and resource and cultural protection. Specific comments that would strengthen and enhance the preferred alternative are as follows:

Page 2-100, Volume 1. Erosion Control: Please take note of the attached soil survey information and Joint Resolution adopted December 2002 in Joint Convention of the Wyoming Association of Conservation Districts, Wyoming Stock Growers Association, Wyoming Wool Growers Association, and in January 2003 by the Sweetwater County Conservation District.

Page 2-101, Volume 1. Riparian Management Exclosures: Existing exclosures could be maintained, modified, or removed and new exclosures could be developed, as determined by the IDT (as defined in this comment letter). At a minimum, the BLM jointly with the permittees would determine if it would benefit resources.

Page 2-102, Volume 1. Aquifer Recharge Areas: Studies would be conducted with the involvement of the IDT (as defined in this comment letter) on a case-by-case basis to better define aquifer recharge area boundaries. Studies would be done primarily in relation to specific projects. Local governments (Conservation Districts and County Commissions) should be kept involved in the development of all Transportation Plans.

Response:

IDTs are used in various circumstances and different ways. The planning regulations (43 CFR 1610.1-3(c)) discuss the use of the ID approach for planning documents and of whom they are composed (the "team"). It is up to the Field Manager to determine the extent of the IDT, and he/she may use "any necessary combination of BLM staff, consultants, contractors, other governmental personnel, and advisors to achieve an interdisciplinary approach." Further, in the regulations (43 CFR 1610.2 and 40 CFR 1506.6), it discusses how public participation is to be accomplished, which is very similar to the use of IDTs in the planning process. Another section in the regulations (40 CFR 1502.6) directs federal agencies to use the interdisciplinary approach in the preparation of environmental impact statements. In that section, it states that the "disciplines of the preparers is to be appropriate to the scope and issues identified in the scoping process." The scoping process is described in 40 CFR 1501.7.

Another use of IDTs is in resource management. BLM puts together staff specialists when accomplishing such tasks as developing allotment or habitat management plans, conducting rangeland health evaluations, monitoring resource management plans, performing inventory and monitoring of resource condition and

trends, etc. At these times, the BLM coordinates and consults with a variety of interested publics. The composition of the interested publics varies depending on the resource or activity involved. BLM regulations require such consultation and public involvement. They will not necessarily be identified as an IDT as for planning documents, but the process is similar. Note that public involvement is encouraged in all activities. However, only BLM has authority for all decisions made for public land and resource uses under BLM jurisdiction. See the definition of Interdisciplinary Team (IDT) in the Glossary of the final EIS.

The BLM agrees with the need to obtain soil survey data for Southwest Wyoming. Currently, these data are not available or easily obtainable.

It is standard operating procedure for BLM to work jointly with the livestock permittees to determine the appropriateness and adequacy of riparian management exclosures.

It is standard operating procedure for local governments to be kept involved in the development of all transportation plans. However, local governments would not necessarily be part of the IDT.

Comment:

Page 2-103, Volume 1. Wild Horse Management Area Boundaries and Appropriate Management Levels: Reference consistency with local Sweetwater County Conservation District policy on wild horse management. The SWCCD quotes from our 12/20/02 Draft Land and Resource Use Plan and Policy, Wild Horses Policy 11. Wild horse habitat will be managed to support desired population levels in the [specific HMAs for Sweetwater County]. Management plans will be developed. Gathering and removal plans will be prepared for all other wild horse herd populations, and those gathering and removal plans will be implemented. We also reference the SWCCD board supported and adopted resolutions from the 2002 Mega Agricultural Convention, in reference here, the Wild Horse Management Resolution: BE IT RESOLVED, that Wyoming Association of Conservation Districts (WACD), Wyoming Stock Growers Association (WSGA), and Wyoming Wool Growers Association (WWGA) support immediate emergency federal funding specifically targeted to assist BLM in reducing wild horse numbers to targeted AMLS.

Response:

Wild Horse Herd Area Management Plans have been prepared for all HMAs in the RSFO, except for the newly designated Little Colorado HMA. Monitoring of vegetation use will include livestock, wildlife, and wild horses.

Comment:

Page 2-96, Volume 1. Monitoring Plan: Site-specific monitoring plans would be developed for the project proposals jointly with the BLM and the permittees if relevant to livestock grazing with on-the-ground monitoring being done jointly with the BLM and permittees.

Page 2-105, Volume 1. Guidelines for Livestock Grazing Management: If livestock grazing is determined to be a factor for any allotment that does not meet the "Wyoming Standards for Healthy Rangelands," permittees jointly with the BLM will be involved with standards and guidelines assessments of their allotments and along with the IDT (as defined in this comment letter) to determine appropriate actions that would be implemented.

Page 2-107, Volume 1. Forage Utilization Levels: PFC should not be the basis for management prescriptions. See reference here of the BLM national riparian team. "PFC assessments identify possible stream hydrology problems only." There are numerous other tools besides use levels that should be

considered and utilized to solve riparian problems related to grazing (i.e., seasons of use). PFC should involve an up-to-date soil survey and measurable quantifiable data under peer reviewed methodology.

Response:

It is standard operating procedure to work with permittees in developing site-specific monitoring plans and conducting on-the-ground monitoring. Additional language has been added in the final EIS (Chapter 2, Section 2.7.2.1) to clarify this intent.

Appendix 8 and Appendix 10 specify that permittees are encouraged to participate in the "Standards for Healthy Rangelands" review; this is standard operating procedure.

PFC assessments and other methodology are used to make a variety of decisions. PFC is only part of the data collected that leads up to a management prescription. PFC does not determine the cause of the impact. Refer to Appendix 8 standard operating procedures, which discusses IDT input along with input from users and interested parties.

Comment:

Page 2-94, Volume 1. Vegetation Treatments: A definition of Herbicide loading is needed here. Clarification is needed on prohibiting within 500 feet. Several noxious weeds (dd 11-5-102 (a)(xi) and dd 11-12-104 et seq.) have invaded riparian zones. Tall white top and tamarisk are very prevalent in the riparian zones and along the waters edge. Several herbicides are labeled for use on or adjacent to water.

Response:

Herbicide loading is the process of transferring, mixing, and other processing of chemicals and associated cleaning of equipment. This excludes the actual application procedures used in accordance with label instructions. A definition for herbicide loading has been included in the Glossary of the final EIS. In addition, Appendix 8 of the final EIS has also been updated to indicate BLM has approved herbicides that can be used along waterways and riparian areas.

Comment:

Habitat management plans would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives keeping in consistency with local land and resource use plans.

To the extent possible, suitable wildlife habitat and forage would be provided to support the Wyoming Game and Fish Department (WGFD) planning objectives where it shows consistency with local land and resource use plans.

Page 2-113, Volume 1. Changes in WGFD planning objective levels would be considered based on habitat capability, availability, site-specific analysis by the IDT (as defined in this comment letter) and consistency with local land and resource use plans.

Page 2-113, Volume 1. Water Developments: Wildlife water developments would be considered on a case-by-case basis by the IDT (as defined in this comment letter) to maintain or improve wildlife habitat and resource conditions.

Page 2-114, Volume 1. Special Status Wildlife Species: Potential habitat of special status wildlife species on federal land or on split estate lands would require searches done in accordance with local land

and resource use plans and the IDT (as defined in the comment letter) for the species prior to approving any project or activity.

Page 2-115, Volume 1. Predator Damage Control: Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives and users would be identified on a case-by-case basis by the IDT (as defined in this comment letter). The IDT would determine appropriate planning strategies, with input from APHIS-WS and consistency with local land and resource use plans.

Response:

Please see above response that addresses the IDT as defined in this comment letter. Regarding consistency with local land and resource plans, in addition to public and cooperator input and involvement throughout the JMH CAP planning process, the Governor of Wyoming will review the JMH CAP for consistency with all state programs before a ROD is issued. During implementation of the plan, the BLM will consider local land and resource plans before issuance of decisions, provided these plans fall within the boundaries of BLM's mandate and decision authority.

Comment:

Page 2-119, Volume 1. Black-footed Ferret: BLM would cooperate with U.S. Fish and Wildlife, WFGD, and SWCCD on any black-footed ferret reintroduction within the JMH CAP planning area. Experimental population designation should be expanded to include all of Sweetwater County in regard to the black-footed ferret.

Page 2-123, Volume 1. Introduction and Re-introduction of Species: BLM will complete a full NEPA analysis prior to the introduction of native and non-native (game) wildlife and fish species.

Response:

The introduction of species is within the jurisdiction of the WGFD and/or USFWS, not the BLM. BLM would work with the agency responsible for fulfilling the NEPA requirements associated with the reintroduction of species.

Comment:

We support the preferred alternative because it balances multiple use and resource and cultural protection. Specific comments that would strengthen and enhance the preferred alternative are as follows.

Page 2-127, Volume 1. Native American sites: SWCC and Tribal leaders would be consulted and traditional cultural properties, including respected places, would be protected. This would include negotiating for foreground viewsheds with tribal leaders, the State Historic Preservation Officer, and development proponents.

Page 2-128, Volume 1. Expansion Era Roads and Associated Sites. Consideration would be given to nominating for listing the contributing portions of expansion era roads and associated sites eligible for the NRHP as consistent with local land and resource use plans.

Page 2-128, Volume 1. Historic Livestock Management Sites: BLM would consult with permittees, local livestock industry representatives, and the SWCCD in determining NRHP eligible historic livestock management sites. These sites would be protected from surface disturbing activities within a minimum area of 100 feet as long as that protection does not impede proper livestock grazing management.

Page 3-29, Volume 1. Ranching-Related Historic Sites: Only features on public land should be mentioned here. These sites mentioned here are on privately held land, if sites are mentioned they should be referred to under their correct local known name. Some of these mentioned here are not locally correct.

Page 2-129, Volume 1. Native and Euro-American Sites: An interpretive program on Native and Euro-American peoples would be developed and implemented based on available information. As documentation warrants, sites would be protected by inclusion in the National Register and/or Back Country By Way programs as determined by the IDT (as defined in this comment letter) showing consistency with local land and resource use plans.

Response:

Please see above response that addresses the IDT as defined in this comment letter.

Regarding consistency with local land and resource plans, in addition to public and cooperator input and involvement throughout the JMH CAP planning process, the Governor of Wyoming will review the JMH CAP for consistency with all state programs before a ROD is issued. During implementation of the plan, the BLM will consider local land and resource plans before issuance of decisions, provided these plans fall within the boundaries of BLM's mandate and decision authority.

Mention of some places on private lands is critical to understanding the historical context of the planning area. Reference to sites on private lands will be minimized.

Comment:

A definition of the "Interdisciplinary Team" (IDT) should be "A team made up of BLM staff, permittees, local and state governments and interested public. This definition should be placed in the glossary of Volume 2 of 2, page G-1-14.

Monitoring plan development should include consultation with the IDT. The JMH CAP planning area does not have a completed soil survey on private, state, or federal lands, and partnerships should be put together to accomplish completion of a published soil survey. BLM should prioritize a soil survey of the JMH CAP planning area. BLM priorities should also include on the ground monitoring with the BLM and IDT together to obtain measurable quantifiable data according to scientific peer reviewed methodology. The BLM will need to commit to providing sufficient staff and prioritization of monitoring jointly with the permittees.

Page 2-96, Volume 1. Monitoring Plan: An interdisciplinary monitoring plan would be developed by the IDT (as defined in this comment letter above) to evaluate the overall effectiveness of implementing the management decisions for the planning area.

Page 2-97, Volume 1. Resource indicators, developed by the IDT (as defined in this comment letter), as part of an interdisciplinary monitoring plan, would be part of the criteria utilized by the IDT for determining effects of all activities on all resource values. Monitoring data would be assessed and response actions would be determined by the IDT. Clarification regarding "timing limitations" is needed here. Timing relates to the activity on the approval process.

Response:

A definition of Interdisciplinary Team (IDT) has been included in the Glossary of the final EIS.

Interdisciplinary (ID) teams are used in a variety of circumstances and in different ways. The planning regulations (43 CFR 1610.1-3(c)) discuss the use of the ID approach for planning documents and of whom they are comprised (the 'team'). It is up to the Field Manager to determine the extent of the IDT and he/she may use "any necessary combination of BLM staff, consultants, contractors, other governmental personnel, and advisors to achieve an interdisciplinary approach." Further, in the regulations (43 CFR 1610.2 and 40 CFR 1506.6), it discusses how public participation is to be accomplished, which is very similar to the use of IDTs in the planning process. Another section in the regulations (40 CFR 1502.6) directs federal agencies to use the interdisciplinary approach in the preparation of environmental impact statements. In that section, it states that the "disciplines of the preparers is to be appropriate to the scope and issues identified in the scoping process." The scoping process is described in 40 CFR 1501.7.

Another use of IDTs is in resource management. BLM puts together staff specialists when accomplishing such tasks as developing allotment or habitat management plans, conducting rangeland health evaluations, monitoring resource management plans, performing inventory and monitoring of resource condition and trends, etc. At these times, the BLM coordinates and consults with a variety of interested publics. The composition of the interested publics varies depending on the resource or activity involved. BLM regulations require such consultation and public involvement. They will not necessarily be identified as an IDT as for planning documents, but the process is similar. Note that public involvement is encouraged in all activities. However, only BLM has authority for all decisions made for public land and resource uses under BLM jurisdiction. See the definition of Interdisciplinary Team (IDT) in the Glossary of the final EIS.

The BLM agrees with the need to obtain soil survey data for southwest Wyoming. Currently, these data are neither available nor easily obtainable.

It is standard operating procedure to work with permittees in developing site-specific monitoring plans and conducting on-the-ground monitoring.

Comment:

Cumulative effects must be evaluated for all present and future activities both within the JMH and adjacent areas. Economic values of current and proposed actions must be evaluated.

Response:

Cumulative impacts of all resource areas are discussed in Chapter 4 of the supplemental draft EIS under each respective resource category and have been further evaluated in the final EIS.

Comment Number: 100,386

Comment:

The BLM has systematically provided for lesser protection for Native American cultural and spiritual sites than for other resources in the Red Desert or even with similar non-Indian cultural resources. The BLM fails to provide the necessary agency support for study and identification of these important sites, as it does for other resources. In the limited protections provided (100 ft. buffer zone), the BLM has failed to recognize the distinct differences in fragility, sacredness, and importance of Native American sites. Each type of site will require a varying degree of protection, instead of a one-size fits all approach. With tribal consultation, the BLM should devise a ranking of protection strategies that will fit with the variety of sites that exist. Strong protection standards should be defined for site types, even for those yet unknown, so that at a minimum, disturbance is avoided prior to further analysis.

The BLM fails to protect the viewshed of the Indian Gap Trail, the Boars Tusk, other respected features, and the composite of the sacred landscape of the Red Desert. Even though very limited in information (and recognizing that only 2% of the lands have been surveyed for cultural resources), the BLM report presents a picture of a landscape with a rich and phenomenal number of Native American traditional cultural and religious sites. To ensure the future protection of the sites known, as well as those yet undiscovered, the most protective strategies to preventing land disturbance must be instituted, far beyond Alternative #2.

The agency's Preferred Alternative is unacceptable as a plan for protecting Native American sites, due to all the failures noted above. These include: insufficient buffer zones; VRM classifications that are weak and allow too much disturbance to the visual landscape; lack of agency resources for study and identification of these resources; poorly devised "adaptive management process" that fails to provide up-front protection; and failure to protect the overall landscape of the area. The VRM classifications should be increased for the entire area to classes I and II, which BLM states, "would have beneficial effects on visual quality of historic resources and Native American 'respected places.' "

Communication sites should be limited on high points, which the BLM acknowledges, "would help protect heritage resources from physical and visual impacts."

The entire JMH CAP planning area should be closed to further oil and gas and mining exploration and development. Existing leases should be bought or not renewed when expired. Preventing these significant land disturbing activities throughout the area is the only way to ensure future protection for Native American sites currently known and those for the benefit of future generations-Indian and non-Indian alike-far out weighs the minor and short term mineral potential of the area. The BLM report states that this "would have an overall beneficial impact on heritage resources by eliminating these surface disturbance activities."

The agency should invest additional resources in study, consultation with tribes and elders, identification of traditional Native American sites, and the development of special protective designations for a range of sites so as to ensure the highest level of protection for these Native American cultural resources. Agency enforcement should be increased to ensure that poachers of artifacts are deterred or prosecuted.

Response:

The "100-foot avoidance" measure is a minimum standard that comes specifically from the Protocol Agreement between the BLM and the Wyoming SHPO (see Appendix 7), where it applies only to sites eligible for the NRHP under Criteria D. The BLM and SHPO believe this avoidance distance is appropriate for most Criteria D eligible sites, which are usually archaeological sites. A consultation process would take place before authorization of any activity in which a heritage resource could be affected. The consultation process includes the Wyoming State Historic Preservation Officer and appropriate avoidance and/or mitigation measures would be implemented following this process regardless of the kind of historic property involved.

Where respected places are concerned (whether the place would also be a TCP or a sacred site under appropriate definitions), the BLM would also initiate consultation with tribal leaders. The avoidance distance, in these cases, would be determined based on specific attributes of the heritage resource and potential effects specifically appropriate to the proposed activity. In the event consultation is initiated and there is no response from tribal leaders, the SHPO would still be consulted.

The viewsheds of Indian Gap, Boars Tusk, and the Red Desert are managed by appropriate VRM designations. If an activity is proposed within the area of these features, it would need to be in compliance with the appropriate viewshed designation. In some cases, it may be appropriate to use VRM

processes and GIS viewshed technologies to analyze and achieve compliance with the VRM classification. When application of these measures is appropriate, they will be used.

BLM considered the option of closing the planning area to new fluid mineral leasing; however, this option was dropped from detailed analysis as described in Section 2.1.3.3 of the supplemental draft EIS. The option to pursue buyout or exchange leases in sensitive resource areas with willing sellers was analyzed under Alternative 2 of the supplemental draft EIS. Buy back and/or exchange of existing producing leases within the planning area was also considered but dropped from detailed analysis as described in Section 2.1.3.8 of the supplemental draft EIS. BLM also considered the option of prohibiting oil and gas exploration and development activity on existing leased areas but dropped this option from detailed analysis as described in Section 2.1.3.7 of the supplemental draft EIS.

Closing the entire planning area to mineral exploration and development was analyzed under Alternative 2 in the supplemental draft EIS, but was not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy; less restrictive measures were determined adequate to protect lands and resources in the planning area. Details regarding the implementation of leasing decisions are included in the revised version of Appendix 17.

Comment Number: 100,450

Comment:

The Service realizes that the development of this draft BA is an ongoing process and is not in its final state. The Service recommends that the Bureau continue to develop the BA and provide greater detail in the draft Biological Assessment regarding potentially authorized activities and their effects to listed species.

Response:

BLM consulted with the USFWS during preparation of the final EIS to provide adequate detail of potentially authorized activities and their effects on listed species.

Comment:

The Service recommends that the Bureau clearly indicate what commitments the Bureau intends in regard to listed species and incorporate them into the BA as it is developed and finalized.

Response:

Commitments to listed species are detailed in Pages 2-114, 2-119, 2-120, and in Appendix 3 of the supplemental draft EIS and have been further clarified in Chapter 2 and Appendix 3 of the final EIS.

Comment:

The Service recommends that the Bureau's effects determinations for listed and proposed species be clarified in the final EIS and Final BA on the comments contained herein.

Response:

Effects determinations for listed and proposed species have been clarified in the final EIS and Final BA based on comments received.

Comment:

Volume 1, Chapter 2, Page 13, Lines 16-18, 23-25; Page 35, Line 1; Page 75, Lines 23-26; Page 110, Lines 22-28; Page 111, Lines 27-33; Page 114, Lines 11-17; Page 120, Lines 18-24: The document states that "protective measures will be developed in consultation with the USFWS." The Service suggests that the word "consultation" be dropped from this sentence to read, "...protective measures will be developed with the Service." The term "consultation" has legal connotations associated with the Endangered Species Act of 1973, as amended 16 U.S.C. 1531, et seq., and typically occurs prior to issuance of a record of decision or final EIS.

Response:

The suggested changes have been made in the final EIS.

Comment:

Volume 1, Chapter 2, Page 46, Lines 16-19; Page 75, Lines 41-43; Page 2, Lines 3-7 and Volume 2, Appendix 3, Page 11, Lines 37-39: The document states that traffic speeds for Bureau roads will be "limited" within ¼ mile of mountain plover nesting concentration areas. The Service believes that the Bureau should clarify the meaning of "limited" in a way that is understandable to all Bureau land users.

Response:

Since the writing of the supplemental draft EIS, the mountain plover has been removed from consideration for listing under the Endangered Species Act. The Bureau will continue to manage the mountain plover under our 6840 policy for Wyoming BLM Sensitive Species until scientific information shows that special consideration is no longer warranted. Additional actions would be taken to reduce impacts to the mountain plover, such as limiting traffic speeds. The speed limits (yet to be determined) would be adjusted to a speed that would reduce the likelihood of collisions with adults and chicks.

Comment:

Volume 1, Chapter 2, Page 119, Lines 11-17, and Volume 2, Appendix 3, Page 10, Lines 17-19: The document states that black-footed ferret "searches" would be conducted within 1 year prior to authorizing any surface-disturbing or disruptive activities in all portions of potential ferret habitat. The Service suggests that this statement be reworded to state that black-footed ferret surveys would be completed "according to current Service protocol" within 1 year prior to "conducting" any surface disturbing or disruptive activities in all or portions of potential ferret habitat areas.

Response:

The suggested changes have been made in the final EIS.

Comment:

Volume 1, Chapter 2, Page 120, Lines 25-31: The document states that "avoidance areas for surface-disturbing activities and disruptive activities" would be designated for active mountain plover nesting aggregation areas from April 10 to July 10. The Service recommends that the Bureau define "avoidance area" and provide a clear description of what types of activities could be authorized in these areas.

Response:

A definition of avoidance areas for surface disturbing and disruptive activities has been added to the Glossary of the final EIS.

Comment:

Volume 1, Chapter 2, Page 121, Lines 14-18: The document states that "measures" will be taken to limit hunting perches or nest sites for avian predators. The Service recommends that the Bureau describe these "measures" in detail.

Response:

Examples of measures that will be taken to limit hunting perches or nest sites for avian predators have been added to the final EIS.

Comment:

Volume 1, Chapter 3, Page 21, Line 25; Page 22, Lines 1-6: The document states that whooping cranes may be present in the planning area and therefore require an evaluation under the Act. The Service considers the whooping crane to be extirpated in Wyoming as the experimental whooping crane population, which made up the Grays Lake migratory population, no longer contains any whooping cranes. Due to this information, there is no longer any reason to develop a biological assessment and evaluation within the planning area for the whooping crane area.

Response:

The suggested changes have been made in the final EIS.

Comment:

Volume 1, Chapter 3, Page 22, Lines 14-19: The document describes the yellow-billed cuckoo and its habitat. The Service recommends that the Bureau clarify that only the western population of the yellow-billed cuckoo is currently on the candidate list for Threatened and Endangered Species recommended for listing under the Act. The western population consists of all individuals west of the continental divide.

Response:

The suggested changes have been made in the final EIS.

Comment:

Volume 1, Chapter 4, Page 50, Lines 41-43: The document states that there would be no effect to the blowout penstemon because occurrence is unlikely. Although the Service agrees that occurrence of the blowout penstemon is unlikely, the definition of a no effect action is one which has no effect, an unlikely effect, or a discountable effect. It is the Service's opinion that effects can still occur to a species even though its occurrence is unlikely.

Response:

The determination for the blowout penstemon will be changed from "no effect" to "may effect, not likely to adversely affect" in the final EIS.

Comment:

Volume 2, Appendix 3, Page 2: The document states that "decisions made in the supplemental draft environmental impact statement will result in amending the RMP." It is the Service's understanding that no decisions are made in the draft EIS and that decisions are actually made in a Record of Decision under the National Environmental Policy Act.

Response:

The Service is correct in its understanding that decisions are made in the ROD for the planning document. The final EIS has been changed to reflect this.

Comment:

Volume 2, Appendix 3, Page 3, Lines 21-27: The document describes a number of potential threats to the bald eagle including: poisoning, shooting, and electrocution. The Service recommends that the Bureau describe additional threats including (1) disturbance of roosting and nesting pairs (2) surface disturbing activity within close range to bald eagle nests and roosts and, (3) disturbance or destruction of foraging habitat for nesting pairs.

Response:

The planning area does not contain habitat for bald eagles; therefore, the determination is "No Effect."

Comment:

Volume 2, Appendix 3, Page 10, Lines 2-3: The document states that the bald eagle is a casual migrant to the planning area and no effects to the bald eagle are expected to occur from implementation of the project plan. The Service recommends that the Bureau provide documentation in the biological assessment that surveys have been conducted and no roosts or nests are known to occur in the planning area. If bald eagle roosts or nests are found or become established on the planning area, the Service recommends that the Bureau reinitiate consultation with the Service at that time.

Response:

The planning area and surrounding areas were surveyed for raptor nests and potential nesting sites in 1980. In addition, numerous routine surveys in the planning area have been conducted for mineral development and range projects. Information regarding these surveys has been added to the biological assessment. Should there be indications that the bald eagle is inhabiting the planning area, BLM will reinitiate consultation with the Service.

Comment:

Volume 2, Appendix 3, Page 10, Lines 6-8: The document states that surface-disturbing activities on or near prairie dog towns or colonies as a result of mineral development activities could "take" black-footed ferrets. The Service recommends that the biological assessment contain a more detailed description of these "surface-disturbing activities."

Response:

Surface disturbance is defined in the Glossary of the supplemental draft EIS.

Comment:

Volume 2, Appendix 3, Page 14: The document states that the depletion analysis for coalbed methane development only considers withdrawals for well drilling and completion. The document goes on to state that dewatering for coalbed methane production will evaluate during the site-specific analysis required for the Application for Permit to Drill process. Under the consultation process, the Service would need to know what the extent of withdrawals will be for well drilling, well completion, and for the coalbed methane production phase of the operation. Dewatering should not be analyzed separately from withdrawals for well drilling and completion as it is interrelated and interdependent to them.

Response:

The amount and extent of water withdrawal from the CBM seam is specific to each seam. Because no CBNG wells have been drilled and produced in this area, the amount to be withdrawn is unknown. Estimates on the amount of water to be used for drilling and completion of a well is usually based on the depth of the well and using standard drilling processes. This amount is easily determined based on standard industry practices. BLM agrees that the process of withdrawing water from the coal seam is related to the drilling of the well. However, it is the BLM's opinion, given the limited information (Triton Energy proposed project, 1991) and based on the depth of the coal seams in the JMH CAP area, that the aquifer where the coal seam is located is not connected to, and does not affect, surface water resources. In addition, any future CBM projects will most likely require additional analysis and subsequent renewal of Section 7 consultation. More precise information may be acquired at that time, and with actual development of the resource.

Comment:

The table gives a figure of 1.5 acre-feet of water-use per oil and gas well. The Service recommends that the Bureau clarify how it determined the estimate of 1.5 acre-feet per well. In addition, the Service recommends that the Bureau describe what the use of the water will be for (i.e., drilling).

Response:

The 1.5 acre-foot/well figure was provided by industry experts. It is an estimated amount of water required for drilling and completion of gas wells based on depth of drilling (supplemental draft EIS Appendix 3 and P. 4-86).

Comment:

The document states an effects determination of "likely to jeopardize the continued existence of the species." The Service has previously determined that any depletion to the Colorado River System would lead to Jeopardy for downstream Colorado River Fishes. However, because of progress in the recovery of these species by the Colorado River Program, the Service recommends that this determination be changes to "may adversely affect the four endangered Colorado River Fishes and their critical habitat."

Response:

The suggested changes have been made in the final EIS.

Comment:

Volume 2, Appendix 3, Page 16, Lines 35-37: The document states that the Bureau assumes that state and private landowners are responsible for initiation of consultation with the Service should there be a possible threatened or endangered species on their land. If there is no Federal nexus through permitting, funding or otherwise authorizing the project or action on state or private land then the landowners need not contact the Service unless the landowners are concerned that they may "take" a listed species under the Act. If there is a Federal nexus on a project to be implemented on private or state land, then the Service should be contacted to determine if the projects may affect a listed species.

Response:

The difference between the presence of a federal nexus on a project and the absence of a federal nexus on a project has been clarified in the final EIS.

Comment:

Volume 1 and 2: The Service believes that the documents inadequately address the effects of oil and gas production on migratory birds. The Service recommends that the Bureau consider the following information for use in their analysis of effects.

Oil Production: Oil production may result in the use of skim pits to separate oil from produced water. Birds are attracted to oil pits by mistaking them for natural bodies of water. The sticky nature of oil entraps birds in the pits and they die from exposure and exhaustion. Birds that do manage to escape can die from starvation or the toxic effects of oil ingested during preening. Waterfowl ingesting sublethal doses of oil can experience impaired reproduction. Additionally, female aquatic birds returning to their nests with oil on their feathers can inadvertently apply the oil to the eggs. Microliter amounts of oil applied externally to eggs are extremely toxic to bird embryos. Scavengers and predators can also suffer adverse effects by consuming oiled birds. A study of bird mortality in oil pits in Wyoming conducted by Brent J. Esmoil for the University of Wyoming demonstrated that deterrents such as flagging, strobe lights, metal reflectors and noise makers were not effective at preventing bird mortalities from occurring in these pits. Esmoil did not find any mortality in pits completely covered with netting or wire mesh. The analysis should address measures to prevent migratory and other wildlife mortality in oil field production pits.

Response:

The suggested information has been added to the final EIS. BLM has clarified Best Management Practices to reduce the effects of pits on migratory birds in Appendix 6 of the final EIS.

Comment:

Natural Gas Production: Natural gas production may require the disposal of large volumes of produced water with high levels of total dissolved solids (TDS). Produced water with TDS levels exceeding state water quality standards is usually disposed of by deep well injection or in commercial oil field wastewater disposal facilities. The commercial disposal facilities dispose of the water by evaporation in large ponds. Pits or ponds containing hypersaline water can pose a threat to migratory birds. Birds entering these pits can ingest the brine and die from sodium toxicity. Salt toxicosis has been reported in ponds with high sodium concentrations. Ingestion of water containing high sodium levels can also pose chronic effects to aquatic birds, especially if a source of freshwater is not available nearby. Aquatic birds ingesting hypersaline water can be more susceptible to avian botulism. During cooler temperatures, sodium in the hypersaline water can crystallize on the feathers of birds landing in these water bodies. The sodium crystals destroy the feathers thermoregulatory and buoyancy functions causing the bird to die of hypothermia or drowning. Thus, it is important to cover the pits if birds are using them. The supplemental draft EIS should address these impacts and measures to avoid or mitigate these impacts.

Response:

The suggested information has been added to the final EIS. BLM has clarified Best Management Practices to reduce the effects of pits on migratory birds in Appendix 6 of the final EIS.

Comment:

Coalbed Methane gas production: The Service realizes that the Preferred Alternative for the supplemental draft EIS does not authorize surface discharge of produced water for coalbed methane production. However, if the Preferred Alternative is not selected or is modified to allow surface discharge or produced water, then the following information may be pertinent.

Coalbed methane gas production may also require the disposal of large volumes of produced water. Produced water often contains high concentrations of dissolved salts, making it unsuitable for irrigation and toxic to native plants. Soils irrigated with this water will accumulate salts which destroys soil structure to support plant productivity. While there is debate over absolute values for acceptable limits for SAR, there is consistent agreement that high SAR water is a source of significant impairment for many soils, particularly irrigated soils and soils of arid or semi-arid regions. Consequently, important wildlife habitat may be severely impacted or eliminated by surface discharge of produced water. Additionally, discharging large volumes of produced water into rivers and streams can severely impact aquatic species and their habitats. Potential impacts include changes in stream temperature and hydrology, and increased erosion and sedimentation resulting in the destruction of fish spawning grounds and compromising fish and aquatic invertebrate growth and survival. Discharge of coalbed methane produced water into closed containment reservoirs for disposal by evaporation may present a risk to aquatic birds because trace elements in closed containment ponds can be elevated through evaporative concentration.

Response:

The Colorado River Salinity Compact does not allow for surface discharge of produced water. Produced water will be injected into the subsurface in accordance with state and federal requirements.

Comment:

The Service has received petitions to list the sage-grouse (Centrocercus urophasianus), white-tailed prairie dog (Cynomys leucurus), and the pygmy rabbit (Brachylagus idahoensis) pursuant to the Act. We encourage the Bureau to take all necessary measures allowable to protect sage-grouse, white tailed prairie dogs, and pygmy rabbits in the project area to ensure projects do not exacerbate factors contributing to decline of these species and thus give support to their listing petitions. We encourage the Bureau to work closely with the Wyoming Game and Fish Department to develop measures to conserve these species to be implemented as part of proposed projects in the Jack Morrow Hills Area.

Response:

BLM agrees with your determination that these species deserve special consideration. BLM is currently working very closely with the WGFD to identify and manage greater sage-grouse habitats, and Wyoming BLM is currently initiating a statewide survey for pygmy rabbit habitat, to be conducted in 2004. The Rock Springs BLM will begin mapping prairie dog towns in 2004.

Comment Number: 100,457

Comment:

Wyoming Fish and Game will soon be issuing the Final Wyoming Greater Sage-Grouse Conservation Plan. The Final Environmental Impact Statement (final EIS) should incorporate the objectives and goals of that conservation plan and include additional mitigation or conservation procedures that were not included in the draft EIS.

Response:

The Final Wyoming Greater Sage-Grouse Conservation Plan is being evaluated along with the BLM Director's Greater Sage-Grouse Conservation Strategy, and clarification relating to management of greater sage-grouse has been provided in the final EIS.

Comment:

The site-specific and detailed information required by the GRRMP will not be provided until the adaptive management plan is implemented and monitoring information is collected and analyzed. This approach implies that important decisions concerning removing lease suspensions and opening new areas to leasing cannot be done in this document, but must wait until site specific and detailed information is provided for new production areas under proposed adaptive management program. An example of this inconsistency is provided by Map 54, which shows all of the areas that will be opened to new leases. This map implies that leasing decisions have already been made prior to the adaptive management process being in place and without additional site specific and detailed information being provided in the CAP.

Although the supplemental draft EIS text briefly discusses phasing oil and gas development and lease decisions, it is still not clear how BLM would be able to implement a phased approach to oil and gas leasing and development under an adaptive management approach.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment:

The supplemental draft EIS has expanded the discussion on the adaptive management approach to resolve the potential conflicts between oil and gas development and wildlife habitat in the "Core Area." Although the adaptive management approach has been outlined in this document (Appendix 17), the approach still remains very conceptual. The adaptive management presented in the supplemental draft EIS postpones developing the specific delineation of thresholds, funding mechanisms, monitoring plans, a decision tree for future adaptive management decisions such as leasing, and a public participation plan. The document does recognize that these are important elements of the adaptive management approach, but defers the identification of these adaptive management elements until after the CAP is completed. It is essential that these elements be provided in the final EIS in order to remove some of the uncertainty concerning the magnitude of potential impacts to wildlife and habitat.

Although it is not a requirement that the entire adaptive management plan be provided in the CAP, including these basic elements of an adaptive management plan is important because the Green River Resource Management Plan (GRRMP) deferred future oil and gas leasing until more site-specific and detailed information could be supplied. The GRRMP made it very clear that these analyses were needed before leasing decisions could be made and anticipated that this information would be collected and provided in the CAP. Instead of supplying the information identified in the GRRMP, BLM has proposed to employ the adaptive management process proposed here. Therefore, it is important to at least clarify the information identified in the GRRMP.

In summary, EPA suggests that the final EIS expand Appendix 17 to provide the following information concerning adaptive management:

- Delineate impact thresholds for resource indicators.
- Provide information for funding mechanisms covering monitoring and other activities to carry out the adaptive management process. This information should include costs and BLM budget projections for this activity.

- Outline monitoring plans. For example, in order to prepare an adequate budget proposal, BLM will need to determine the monitoring data to be collected, length of monitoring periods and frequency of data collection and cost of analysis and report writing.
- Provide an adaptive management decision tree for removing lease suspensions and future leasing decisions.
- Provide a public participation plan

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Comment Number: 100,492

Comment:

More protection needs to be afforded to Native American cultural and spiritual sites. The Preferred Alternative states, "the planning area would be managed to protect important heritage resources (cultural, historic, archaeological, and unique geological features) while allowing for education research and appropriate interpretive uses." I believe, however, that more prescriptive consultation and protection measures should be included. Specifically, consultation with tribal elders or other designated representatives of the Tribes should be provided for prior to any activity that could negatively impact or interfere with use of a respected or religious area. In addition, the Indian Gap Trail should be elevated to the same level of importance and protection as other historic trails in this area.

Response:

A more detailed description of the Native American consultation process has been added to the final EIS. The Indian Gap Trail is eligible for the NRHP, but it has not been fully recorded and documented at this time. It is not possible for the BLM to elevate it to the same status as the National Historic Trails because designation requires congressional action; however, it will be managed with all protections as a NRHP eligible property. During the consultation process BLM discussed opportunities for interpreting the history of the Indian Gap Trail. Please see Chapter 5 for updated information on the tribal consultation activities associated with this planning effort. Also, Appendix 7 has been updated to outline the steps in the consultation process with the tribes.

See also responses to Comment 100,378, and discussions in Chapter 5 of the final EIS.

Comment:

The supplemental draft EIS must recognize that the responsibility and authority for protection and management of the air resource lies with the State, not only for the Jack Morrow Hills area, but for all of Wyoming. Consequently, to ensure the air quality does not degrade (and perhaps improves) I suggest the BLM remain in close coordination with the State regulatory agency as management decisions are being contemplated for the area.

While there has been some discussion of potentially applying BACT to "grandfathered" sources and Best Available Retrofit Technology (BART) to all emission sources in Southwest Wyoming, it must be recognized that there are specific regulatory limitations in both these Federal and State rules. On the

other hand, in exercising its permitting authority, the State will continue to limit emissions to the maximum extent possible from any source operating or proposing to operate in Wyoming. It should also be noted that, although there is some concern expressed regarding cumulative impacts—extending to whether Class I or Class II increment has been consumed—there have been no regulatory analyses performed to confirm or dispel this concern. The Wyoming DEQ, however, is currently in the process of rectifying this deficiency by developing a comprehensive statewide current and baseline emissions inventory and the necessary modeling protocols to conduct the analyses, not only for Southwest Wyoming, but for other areas of the State as well. This is a complex effort and will require some time to complete, however the State is targeting completion of this effort in mid-2004. In the meantime, I encourage the BLM, within the scope of its authority and in close coordination with State and Federal regulatory agencies, to implement management actions that minimize emissions.

In particular:

- Enforcement by BLM of Standard Federal Oil and Gas Lease Term #6 (Conduct of operations) to control operations in a manner that minimizes impacts to air resources.
- Control particulate emissions (PM10 and PM2.5) by ensuring timely and complete reclamation of disturbed areas and adequate dust control measures.

Response:

Thank you for your comment. BLM looks forward to continuing further consultation and coordination with the Wyoming DEQ on this issue.

Comment:

Upon consultation with the leaseholder whose lease may be suspended, I believe that a lease buy-out or exchange is an option that might be pursued. This action would save time and money in the long-term by avoiding conflict between mineral development and areas of cultural and/or environmental concern. This seems particularly important since I was told during a recent tour of the Jack Morrow Hills that 40 percent of the core area is already under lease.

Mineral exchanges should also be pursued where state acreage is embraced within EIS restricted area. Equal-value, developable federal land and minerals should be exchanged for the impacted state acreage where possible. However, such exchanges could be balanced or augmented by cash or other valuable interests.

Response:

The option to pursue, buy out, or exchange leases in sensitive resource areas with willing sellers was analyzed under Alternative 2 of the supplemental draft EIS. BLM, at any time, has the option to consider buy out or exchange of leases if approached by a willing seller. Please see the updated information in Chapter 2 of the final EIS. The consideration of land exchanges, including exchange of state lands, was addressed as part of all alternatives in Chapter 2 of the supplemental draft EIS.

Comment:

I would appreciate your looking at the existing leases within the JMH CAP to ensure that some form of mitigation measure is included. If there is not, I would ask you to consult with the leaseholders and attempt to establish new leases within the framework of the new RMP that would include mitigation and recovery.

Response:

For those leases that do not contain adequate stipulations to protect sensitive resources, Conditions of Approval (COA) can be added to an APD following a site-specific analysis.

Comment:

Many sensitive species are at historically low numbers and have the potential for an endangered listing if their numbers decline. It is in the interest of all stakeholders to prevent such listing from occurring by protecting these species. I encourage you to enhance the recommendations put forth in Alternative 2 towards this goal. This action, along with the leaseholders' agreements in dealing with threatened and endangered species, should provide enough protective measures to ensure continued recovery of these species.

Response:

The BLM 6840 manual provides management direction for all special status species. These include species that are federally listed, proposed, or candidates for listing as endangered or threatened, BLM determined priority (sensitive) species, and/or state listed. Under this direction, the BLM is required to treat species proposed for listing as threatened and endangered with the same level of protection required for listed species.

Comment:

I understand some disturbance within the big game migration patterns is inevitable, but I would recommend further study to determine the disturbance threshold of the planning area. In addition, I suggest making projections and developing proactive solutions to address these problems instead of resorting to ill-defined adaptive management. A wildlife mitigation fund might be an option worth exploring. I believe such an approach was applied in the original development of the Overthrust Belt, and may be adaptable to the Jack Morrow Hills. The draft EIS states that once disturbance reaches a certain threshold, impacts are expected to become significant. I am instructing the State Working Group to ensure that some forethought is given to the potential effects to wildlife from this impact, and to address them with you. Because of the sensitivity of this plan, I do not believe that a complex and costly "adaptive management" strategy is sufficient, and believe that it would foster financial and planning problems for the State and BLM.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

BLM will continue to work with WGFD and the University of Wyoming on this issue to determine the disturbance thresholds for these species. BLM looks forward to forming a working group with the State of Wyoming for continued involvement in implementing the CAP. Consideration of a mitigation plan like that identified for the Overthrust Belt could be a topic of discussion with the working group.

Comment:

Overall I encourage you to reexamine and promote the wildlife provisions of Alternative 2 within the new Preferred Alternative. Both of our offices have received extensive correspondence regarding wildlife protections. I add my support in encouraging you to ensure species viability and long-term survival.

Response:

It is our intent to continue to provide healthy habitats for wildlife species.

Comment:

The Steamboat Mountain ACEC needs to be expanded to its greatest allowable extent for the protection of crucial elk winter range and birthing areas. Within this expanded area, protections need to be put in place to maintain current population objectives for these species. The cumulative effects on the elk and deer that could arise from potential development in the Red Desert could prove to be disastrous for these two species in the future. The JMH CAP will set a precedent on how wildlife protection will be viewed with respect to other Resource Management Plans in this area.

Response:

The Proposed JMH CAP provides management for protection of sensitive resources in and around the Steamboat ACEC with the ACEC boundary expansion and Steamboat Mountain Management area. Both areas provide protection for the greatest area of overlap of big game winter range and birthing areas and the highest concentration and overlap of unique habitat features, natural systems, and cultural values.

Comment:

Adaptive management is a central element of the plan, yet it is the aspect that causes me the greatest concern. Simply put, I wonder whether it will result in a management philosophy that has the potential to change over time, thereby making it difficult to respond to at the state level. I am left to wonder what data will be generated to drive or justify that change. If the Department of Interior and the Bureau of Land Management are going to make use of adaptive management, then it is imperative that there is meaningful state and local participation throughout the process. I would ask that a specific state role be defined in this process in order to maintain balance. In additional to my request for state participation throughout the adaptive management process, I would also request that a proportionate share of state lands be included in any area in which mineral development is allowed. This would mitigate the possibility that any mineral development restrictions could disproportionately impact the dispersed state lands, which comprise approximately six percent of the total acreage.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

In addition, please see responses to comment number 100,338.

A-19.21 CITIZENS WILDLANDS AND WILDLIFE ALTERNATIVE

Comment Number: 100,453

General Comment:

Comment:

We respectfully request, in accordance with the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act, 40 C.F.R. 1500.1 et seq., that the Citizens Wildlife

and Wildlands Alternative be included in the final EIS and be given full consideration and careful review commensurate with the area's outstanding natural features.

During the summer and fall of 2000, unprecedented numbers of citizens from all across the United States and abroad urged the BLM to adopt the Citizens Red Desert Protection Alternative. Incredibly, the BLM flatly rejected the citizen's request, deeming elements of the Citizens Alternative "unreasonable" (see JMH supplemental draft EIS at 2-3). Not only did this decision to dismiss the alternative violate NEPA, it ignored specific direction from then Secretary of Interior Bruce Babbitt who admonished the BLM in a December 22, 2000, memorandum (attached as Exhibit B) to "protect this unique area and its outstanding resources" by proposing "the conservation alternative as its preferred alternative."

Response:

The Citizen's Red Desert Protection Alternative and Wildlife and Wildlands Alternative are not comprehensive alternatives dealing with all land and resource uses in the area in a multiple use context. Components of these alternatives were addressed in the alternatives that BLM has analyzed in both the supplemental draft EIS and final EIS.

In response to former Secretary Babbitt's direction to select the conservation alternative as the preferred alternative, this direction violates the provisions of NEPA and CEQ regulations.

Comment:

The Secretary's memo was transmitted to the BLM Director along with a legal memorandum, with which the Secretary expressly concurred, drafted by then Interior Solicitor John Leshy (see Exhibit C). Among other things, the Solicitor's memo criticized the BLM's draft EIS for "erroneous assumptions" and failure to include and clearly identify an appropriate conservation alternative. According to the Solicitor, the BLM's adherence to faulty assumptions caused the agency to reject reasonable management options advocated by the public, such as closing some or all of the JMH CAP planning area to further oil and gas leasing and hard rock mineral entry. The Solicitor couldn't have been more clear in saying that "it was not appropriate for the draft EIS to refuse to consider such actions." "Under these circumstances," he wrote, "it is not unacceptable -as the draft EIS assumes to close the planning area or a substantial planning area to new mineral leasing. Instead, it is a reasonable alternative that ought to be carefully considered in the NEPA documentation."

Unfortunately, despite the specific recommendations for improving the draft EIS, the supplemental draft EIS suffers from many of the same serious flaws. Except for the existing White Mountain communication site, the planning area is closed to communication sites.

Response:

Following the change in administration, the acting director of BLM issued direction to—

- Finalize a thorough analysis of the public comments on the initial draft EIS
- As a result of the comment analysis at that point, prepare a supplement draft EIS to include and evaluate a broad range of alternatives, including a conservation and preservation alternative
- Develop the supplemental draft EIS using standard BLM planning processes and CEQ guidelines for NEPA analysis
- Foster proactive communication and consultation
- Involve the State of Wyoming as a partner in the evaluation

- Obtain services of a third-party facilitator
- Assist in promoting the involvement of all interested parties
- Obtain the services of a third-party contractor to assist in completing the planning effort in a timely and thorough NEPA evaluation
- After completing analysis of public comment and evaluation of alternatives, identify a preferred alternative.

This direction was followed in preparing the supplemental draft EIS and final EIS. Alternative 2 of both the supplemental draft EIS and final EIS (the preservation alternative), analyzed in detail, closes a substantial portion of the planning area to oil and gas leasing, hard rock mineral entry, and other surface disturbing and disruptive activities.

Heritage Resources Management

Comment:

The Wildlife and Wildlands Alternative provides enhanced protection for culturally significant areas revered by Native Americans.

The Jack Morrow Hills Study Area is rich in nationally significant cultural and historic resources. The area is home to such icons as the South Pass Historic Landscape, the Outlaw Trail, the Pony Express, Point of Rocks - South Pass Stage road, Mormon Pioneer, Oregon and California Pioneer Trails in addition to such sites as the Tri-Territory Marker- the juncture of the Oregon Territory, the Louisiana Purchase and the newly formed Mexican Republic; and the Oregon Buttes- the gateway to the Great Divide Basin. Legendary figures such as Chief Washakie, Butch Cassidy, Jedediah Smith, Jim Bridger and Kit Carson all strode this landscape and the wagon ruts left behind by over 450,000 pioneers emigrating through South Pass may still be seen today in some locations.

Although only 2% of the planning area has been surveyed for resources of cultural importance, the area is home to "cultural evidence from some of the earliest inhabitants of the North America continent and are some of the most intact manifestations of such archaeological evidence known anywhere on the continent." Volcanic formations in the planning area such as the Boars Tusk are central to Shoshone creation mythology, and holy sites and areas of cultural importance abound through the area, including the Indian Gap Trail, Steamboat Mountain, White Mountain Petroglyphs, Joe Hay Rim, Killpecker Creek, and the Sands.

Rock art, burial sites, cairns, tipi rings, and campsites anywhere from several hundred years old to several thousand years old have been identified in the JMH CAP planning area. It should be remembered that the vast landscape of the Red Desert, with its shifting sand dunes, flat top mesas, volcanic cones and mountain vistas, has sacred meaning to many Native American Indian Tribes and cannot necessarily be separated into pieces and parcels. The Shoshone, Ute, Arapaho, and Crow used the area for hunting and gathering of medicine, as did other tribes.

The Wildlife and Wildlands Alternative adopts the management objective for Heritage Resources described in the BLM's Preferred Alternative: "The planning area would be managed to protect important heritage resources (cultural, historic, archaeological, and unique geological features) while allowing for educational research and appropriate interpretive uses."

Native American traditional elders have identified a number of sites important for traditional, sacred or religious uses by Native peoples. Elders in this region have referred to these sites as "respected places." supplemental draft EIS at 4-89. Native American respected places (see Glossary at G-7) located within the planning area would be managed to achieve the highest level of protection -- comparable to nationally-important historic trails and sites, such as South Pass and the Oregon, Pony Express, and Mormon Pioneer Trails, found within the planning area.

Specific management prescriptions for respected places include:

- Consultation with Tribal traditional elders or other designated representatives of the Tribes prior to any activity that could negatively impact, or interfere with use of, a respected place.
- VRM Class I (for pristine, undeveloped sites); VRM Class II (for sites with minor intrusions or existing development).
- Exclusion area for pipeline ROWs, utility lines and other linear features.
- Communication sites prohibited.
- Existing oil and gas leases remain under suspension pending site-specific analysis to
- determine if development can occur without adverse impacts. Lease exchange and buy outs pursued.
- Surface disturbance and disruptive activities would be prohibited within viewshed or three miles of respected places.
- Federal ownership retained.
- Withdrawn from locatable mineral entry.
- Closed to leasable solid and fluid minerals.
- Closed to mineral material sales.
- Seismic exploration using vibroseis buggies and other ground disturbing techniques prohibited.
- Increased agency enforcement to ensure artifact poachers are deterred or prosecuted.
- Indian Gap Trail and viewshed is surveyed, mapped and added to National Historic Trails system, achieving level of protection equivalent to Oregon, Pony Express, and Mormon Pioneer trails.

The Wildlife and Wildlands Alternative provides increased protection for nationally significant trails like the Pony Express Trail and the Oregon Pioneer Trail.

Heritage resources not specifically addressed above would be managed in accordance with JMH Alternative 2.

Response:

The reference to 2 percent of the area identified as inventoried refers to the portion of the planning area where site-specific Class 3 field inventories for cultural information have been conducted. Other less specific reconnaissance surveys and research have been conducted. This resource information is on file in the RSFO and SHPO.

BLM's research indicates that Shoshone viewed such places with interest and in some cases with fear. They often house spirit beings who usually are malevolent. There do not seem to be actual Shoshone creation myths, as there are in some tribes. Furthermore, discussion with several Shoshone informants while touring the area did not result in any information concerning Shoshone creation myths. Rather, the Shoshone appreciate the landscape and attach special meaning and value to it more in an individualistic sense than in creation myths. BLM would welcome any additional research and information you may have on this subject.

Given the diversity of Native American respected places and activities occurring within the planning area, BLM believes site-specific Native American consultation and analysis, as outlined in Table 2-1, Chapter 2, and Appendix 7, provides the flexibility for appropriate protection of respected places on a site-specific basis.

BLM will continue to research, map, and consult with Native Americans on the Indian Gap Trail through preparation of a Cultural Resource Management Plan. Only Congress has the authority to designate the Indian Gap Trail as an NHT. BLM believes that Indian Gap does not meet the criteria for designation under the National Trails System Act of 1968 as amended.

See the response to comment number 100,385 for additional information.

Watershed Management

Comment:

The Wildlife and Wildlands Alternative gives priority to the restoration and protection of air and water quality. The Wildlife and Wildlands Alternative adopts the management objective for watershed resources: "The planning area would be managed to maintain or enhance land and water resources using ecological principles and science-based performance criteria," and adds a number of controls and prescriptions to restore and maintain watershed health and ecological functions.

- Total Maximum Daily Loads would be established under section 303(d) of the Clean Water Act for all perennial water bodies in the planning area to ensure applicable DEQ water quality standards are met.
- Herbicide loading areas would be prohibited within 1000 feet of water sources, wetlands, riparian areas, floodplains and special status plant species.
- Site-specific activity and implementation plans are developed for riparian areas not meeting proper functioning condition.
- Noxious weed and chemical treatment guidelines in Appendix 8 are revised to provide the highest degree of protection for wetlands, riparian areas, surface waters and sensitive plant and aquatic species. Minimum buffer for such resources is 500 feet for ground application, 1000 feet for aerial spraying.
- Wetlands and riparian areas would be exclusion areas for surface disturbing activities. Exceptions granted on case-by-case basis for environmental restoration projects.
- Areas within 500 feet of wetlands and riparian areas would be avoidance areas for surface disturbing activities and permanent structures.
- Special biological studies of the Sands unique dunal ponds and wetlands flora and fauna

- would be initiated by BLM. Appropriate measures to protect these dunal flockets would be initiated if overgrazing, off-road vehicle use, recreation or other activities threaten their ecological integrity.
- New permanent facilities and structures would be prohibited in 100-year floodplains,
- wetlands, and riparian areas. Linear crossings would be allowed only in previously disturbed sites or designated ROW corridors.
- Areas within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing areas.
- Minerals mining and energy development activities would be prohibited in aquifer recharge areas.

Response:

Water quality is the purview of the State of Wyoming through the DEQ. TMDLs are not applied to all streams for which a problem may exist. TMDLs are established on streams that have been determined not to meet state water quality standards. In Wyoming, this task is DEQ's responsibility.

The 500-foot buffer on wetlands, riparian areas, and floodplains represents BLM standard operating procedures and Best Management Practices. Buffers on wetlands, riparian areas, and floodplains for activities, including surface disturbing, disruptive activities, and herbicide loading could be expanded if site-specific analysis determines it is warranted.

It is standard BLM practice through the "Wyoming Standards for Healthy Rangelands" to perform site-specific evaluations of areas not within PFC and to take corrective action as necessary.

Excluding wetlands, riparian areas, and floodplains to surface disturbing activities would increase the potential adverse effects on other resources. The analysis of designating all wetlands, riparian areas, and floodplains as exclusion areas for surface disturbance activities under the Proposed JMH CAP does not show that exclusion of these areas is necessary to adhere to BLM's multiple use policy because less restrictive measures were determined adequate to protect lands and resources in the planning area. The Proposed JMH CAP provides for protection of the resource but still provides the flexibility to allow multiple uses within the planning area.

BLM is currently conducting a biological study within the southern portion of the dunal ponds. As funding permits, BLM would implement other biological studies within the area.

Closing aquifer recharge areas to mining and energy development activities was analyzed under Alternative 2 in the supplemental draft EIS, but was not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy. Less restrictive measures were determined adequate to protect lands and resources in the planning area. The majority of the aquifer recharge areas are located within WSAs or areas that limited these activities.

Livestock Grazing Management

Comment:

The Wildlife and Wildlands Alternative promotes responsible livestock grazing. Livestock grazing would continue in the planning area as described in the BLM's Preferred Alternative. Emphasis would be placed on restoring rangeland health and proper functioning condition of riparian areas. Upland and riparian vegetation would be managed to achieve objectives.

- All grazing allotments must meet the Fundamentals of Rangeland Health, the Properly Functioning Condition of riparian areas, and other statewide standards and guidelines.
- The condition of all allotments and riparian areas in the planning area will be reviewed at least every three years for compliance with the statewide standards and guidelines.
- Rehabilitation of those allotments or riparian areas that are not in compliance with these requirements will be instituted no later than the start of the next grazing season. The adoption of rehabilitation measures will be a public process.
- Evaluations required under the National Environmental Policy Act and the Endangered Species Act for grazing activities on the Jack Morrow Hills will be completed within three years of adoption of the final CAP.

Response:

It is standard BLM practice through the "Wyoming Standards for Healthy Rangelands" to perform evaluations of all grazing allotments during permit renewals. In addition, annual monitoring is conducted by BLM specialists in various portions of the RSFO. It is also standard BLM practice to coordinate with interested parties on the implementation of actions toward making significant progress to meet the Standards and Guidelines. Site-specific NEPA analysis is also conducted as needed.

Wildlife Habitat Management

Comment:

The Wildlife and Wildlands Alternative ensures the long-term survival of the Red Desert elk and pronghorn antelope herds and other wildlife, and it restores and protects wildlife habitat damaged by roads and pipelines.

Over 350 different wildlife species are found within the planning area. (supplemental draft EIS, Vol. 1 at 3-14). The area provides "crucial habitat" for all three major game species, elk, antelope, and mule deer. Approximately 187,000 acres of the planning area are crucial winter or crucial yearlong range for elk, including the much-acclaimed resident Steamboat Mountain elk herd (the largest desert elk herd in the world), which contains between 1,000 and 2,000 individuals. The area also provides habitat to the largest migratory game herd in the lower 48 states - the 50,000 strong Sublette pronghorn antelope herd.

Seventeen raptor species inhabit the JMH CAP planning area, including ferruginous hawks, golden eagles, prairie falcons, Swainsons hawks, short-eared owls, and burrowing owls. Additionally, numerous species of concern such as flannelmouth suckers, pygmy rabbits, Eastern short horned lizards, Great Basin gopher snakes, and Wortmans ground squirrels find shelter in the planning area. Both the greater sage-grouse and mountain plover, species that have experienced precipitous declines in most of their range- both candidates for listing under the Endangered Species Act- still enjoy fairly sizeable populations in the Red Desert. The area provides an oasis for other sage-brush obligates besides the sage-grouse, including sage sparrows, sage thrashers and sage lizards.

In recognition of this extraordinary resource, Wildlife Habitat is added as a separate resource category (supplemental draft EIS at 2-2) for which the following resource objective is established:

- The management objective for wildlife habitat contained in the Wildlife and Wildlands Alternative provides that fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native species in the planning area.

- A Habitat Management Plan would be prepared for the entire planning area to mitigate wildlife habitat losses. (JMH Alt. 2).

- The habitat management plan would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives designed to achieve and maintain viable populations of native and desired non-native species.

- Suitable wildlife habitat and forage would be provided to support the Wyoming Game and Fish Departments Strategic Plan objectives.

- Big game, sensitive species and their habitat, threatened and endangered species, special status wildlife and fish species, water developments and predators would be managed in accordance with JMH Alternative 2, except that big game connectivity areas would also be considered "sensitive habitat" and managed accordingly.

- Sage-grouse and raptors would be managed in accordance with JMH Alternative 2, except that:
  - Long-term or permanent above-ground surface occupancy would be prohibited within a 2-mile radius of sage-grouse leks, or on nesting habitat and winter concentration areas.
  - Seasonal limitations on disturbing and disruptive activities would apply within two (2) miles of leks, and on nesting and concentration areas, and would be applied 24 hours daily.
  - Permanent or high profile structures would be prohibited within 1-2 miles of active and historic raptor nests, depending on species (2-miles for ferruginous hawks); temporary disturbances associated with placement of facilities would be prohibited within 1-2 miles of active raptor nests; and disruptive activities would be seasonally restricted within 1-2 miles of occupied raptor nesting sites. Precise distance within this range would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line of sight distances, population status, etc.

- As determined by transportation planning, unnecessary roads would be obliterated and reclaimed to a natural, pre-disturbance condition.

- Timely and complete reclamation of disturbed areas is conducted in accordance with Appendix 9 and remains an ongoing liability of the operator until released by BLM.

- Previously disturbed areas and pipeline rights-of-way that have not been successfully reclaimed (i.e., to meet goals and standards in Appendix 9) are identified and scheduled for reclamation consistent with Appendix 9 standards.

- Fences on public lands would be removed, modified or reconstructed where they impede wildlife movement or constitute threats to viability objectives.

- New fence construction in crucial big game wildlife habitats and connectivity areas would only be considered if alternatives, such as herding and other controls, are not possible. Fence construction and reconstruction would be in accordance with Wyoming Game and Fish Department design standards.

Response:

The suggested management actions for habitat management were analyzed under Alternative 2 in the supplemental draft EIS, but were not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy; less or equally restrictive measures were determined adequate to protect lands and resources in the planning area.

It is standard operating procedure for the BLM to reclaim disturbed areas and monitor reclamation success, provide habitat to support the WGFD Strategic Plan objectives, and implement BLM fencing design standards.

BLM has reevaluated management of greater sage-grouse and has provided additional actions for protection of this species in the final EIS (see Chapter 2 and Appendix 6).

The ½- to 1-mile distance around raptor nest sites was established during the Green River RMP planning process in coordination with U.S. Fish and Wildlife Service and WGFD. BLM sees no scientific justification or additional information for analysis of a 1- to 2-mile distance around raptor nest sites to warrant a change to the distance set by the Green River RMP. Raptor nest site distances are considered on a case-by-case basis.

Travel, Access, and Realty Management

Comment:

The Wildlife and Wildlands Alternative promotes responsible recreation, hunting, vehicle use, grazing, and continued access via existing and designated roads.

The Wildlife and Wildlands Alternative adopts -- with revisions to emphasize resource protection -- the BLM's management objective for travel management, access and realty: "Consistent with the highest degree of protection for crucial habitats and sensitive resources, the planning area would be managed to accommodate access needs for approved public land uses and to manage access where appropriate to protect other resource values."

To achieve this objective, the Wildlife and Wildlands Alternative adopts the BLM's Preferred Alternative, with the following modifications:

- Geophysical and related detonation would be excluded from areas with no surface occupancy requirements, WSAs, ACECs, and other sensitive resources. Seasonal limitations would apply (supplemental draft EIS, Alternative 2).
- Right-of-way (ROW) exclusion and avoidance areas would be as shown in Map 27 (supplemental draft EIS, Alternative 2).
- Off-highway vehicle (OHV) use would be managed in accordance with a transportation plan that limits use to designated areas, roads and trails.
- A transportation plan would be completed as part of the JMH CAP, consistent with the terms set out in Alternative 2 of the supplemental draft EIS.

Response:

The suggested management actions were analyzed under Alternative 2 in the supplemental draft EIS, but were not considered for the Proposed JMH CAP, because they were contrary to BLM's multiple use policy; less or equally restrictive measures were determined adequate to protect lands and resources in the planning area.

Recreation Resources Management

Comment:

The Wildlife and Wildlands Alternative promotes responsible recreation, hunting, vehicle use, and continued access via existing, designated roads.

The Wildlife and Wildlands Alternative adopts the BLM's management objective for recreation resources: "The planning area would be managed to accommodate opportunities for recreational resources while protecting other resource values and minimizing conflicts with other resource uses."

Except as indicated below, the Wildlife and Wildlands Alternative adopts the BLM's Preferred Alternative as the best management approach for recreation resources within the planning area.

Recreational mining activity would be limited to a five-acre site that would be designated in the Dickie Springs-Oregon Gulch Gold Placer Mining District area outside elk calving habitat. A recreation site plan would be prepared and implemented to manage the site for recreational purposes. (JMH Alternative 3).

Response:

BLM considered a 5-acre site for recreational mining activity in Alternative 3. The Proposed JMH CAP does not recommend identification of such a site. Recreational gold mining activities can occur throughout the planning area where there are no existing mining claims. Therefore, the Proposed JMH CAP provides for this activity without this designation.

Minerals and Alternative Energy Management

Comment:

The Wildlife and Wildlands Alternative calls for the trade or buy-out of mineral leases in the area while prohibiting all new oil and gas leasing and large-scale mining. The Wildlife and Wildlands Alternative adopts the BLM's management objectives for minerals and alternative energy resources management with one small yet significant revision, indicated in italics, below:

"To provide *limited* opportunities for mineral extraction and energy development while protecting other resource values."

This revised management objective would reduce the potential for future conflict in the planning area due to large-scale oil and gas and mining activities authorized under the BLM's Preferred Alternative.

Actions to implement the revised management objective for minerals and energy development include:

- The planning area would be closed to new leasing.
- Suspended leases in the planning area would remain under suspension while funding is pursued for lease buy out or exchange. Because future development would likely lead to resource conflicts, efforts would be placed on reacquiring both producing and non-producing leases.
- On producing leases where buy out or exchange cannot be accomplished, level and pace of development would be both controlled and limited to avoid significant impact and resource conflicts by a combination of regulatory mechanisms including, but not limited to, lease suspensions, well spacing orders, unitization, conditions of approval and adaptive management, in a manner consistent with valid existing rights.
- The entire planning area would be closed to coal exploration activity. (JMH Alternative 2).
- Federal coal lands within the Coal Occurrence and Development Potential Area would be closed to leasing and development to protect other resource values in the planning area. (JMH Alternative 2).

- Withdrawals from mineral location would be pursued over the entire planning area, except for a five-acre site designated for recreational mining.
- The entire planning area would be closed to mineral material sales. Extraction of salable materials would be allowed as required to meet other planning objectives, such as maintenance of existing roads in the approved transportation plan. Mining and reclamation plans would be required for each use of salable mineral materials (JMH Alternative 2).
- Alternative energy proposals would be managed pursuant to the Preferred Alternative, except that sensitive areas would be off-limits, including but not limited to VRM Class I, Native American respected places, raptor concentration areas, WSAs, ACECs, and sensitive wildlife habitats.
- Coalbed methane development on existing leases is deferred pending revision to Green River RMP.
- The Wildlife and Wildlands Alternative for minerals and energy development is consistent with federal law and policy:

"FLPMA's definition of multiple use expressly recognizes that the most judicious use of land may involve the use of some land for less than all of the resources, and that consideration must be given to the relative values of the resources and not necessarily the combination of uses that will give the greatest economic return... 43 U.S.C. § 1702(c). Thus, foreclosing mineral exploration and development on even a sizeable tract of federal land does not violate the statutory definition of multiple use, and is not per se unreasonable." Memorandum from John Leshy, Solicitor for the Department of the Interior to Bruce Babbitt, Secretary of the Interior, December 22, 2000 (Commenting on the Jack Morrow Hills Coordinated Activity Plan draft EIS).

Response:

BLM considered the option of closing the entire planning area to new leasing; however, this option was dropped from detailed analysis as described in Section 2.1.3.3 of the supplemental draft EIS. The various alternatives analyzed in detail provide for a range of areas open or closed to leasing. Please see the clarifications provided in Chapter 2 of the final EIS.

The option to pursue buyout or exchange of leases in sensitive resource areas with willing sellers was analyzed under Alternative 2 of the supplemental draft EIS. Buy-back and/or exchange of existing producing leases within the planning area was also considered but dropped from detailed analysis as described in Section 2.1.3.8 of the supplemental draft EIS. BLM also considered the option of prohibiting oil and gas exploration and development activity on existing leased areas but dropped this option from detailed analysis as described in Section 2.1.3.7 of the supplemental draft EIS.

Closing the entire planning area to coal exploration and development was analyzed under Alternative 2 in the supplemental draft EIS, but was not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy. Less restrictive measures were determined adequate to protect lands and resources in the planning area. Presently, there are no coal operations within the planning area. Current information also indicates that future coal development in this part of Wyoming would focus on the extension of existing mining activities, which are outside the planning area.

Closing the entire planning area to mineral location was analyzed under Alternative 2 and the designation of a 5-acre recreational mining sites was analyzed under Alternative 3 in the supplemental draft EIS, but were not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy. Less restrictive measures were determined adequate to protect lands and resources in the planning area.

Closing the entire planning area to mineral material sales was analyzed under Alternative 2 in the supplemental draft EIS, but were not considered for the Proposed JMH CAP because of it being contrary to BLM's multiple use policy. Less restrictive measures were determined adequate to protect lands and resources in the planning area.

Visual Resources Management

Comment:

The Wildlife and Wildlands adopts the BLM's management objectives for the protection of visually sensitive areas: "To maintain or improve scenic value and overall visual quality by managing impacts of human activities and other intrusions on the visual landscape." To achieve this objective, the following actions are recommended:

- Wilderness Study Areas (WSA) and WSA expansions recommended by the Wyoming Wilderness Coalition (supplemental draft EIS Vol. 2 at A18-1) are managed VRM Class I.
- National Historic and Scenic Trails and viewsheds (5 miles either side) managed VRM Class I.
- VRM Class I (for pristine, undeveloped sites); VRM Class II (for sites with minor intrusions or existing development).
- Backcountry byways and their viewsheds designated VRM I.
- Areas of Critical Environmental Concern (ACECs) whose designation is based in whole or in part on scenic and aesthetic value would be managed as VRM Class 1; all other ACECs would be designated VRM Class II.
- Eden Valley managed as VRM Class III.
- All remaining areas managed as VRM Class II.
- Except as otherwise provided, no areas in the Jack Morrow Hills planning area would be managed as VRM Class III or IV.

Response:

Areas submitted by citizens groups for consideration as wilderness were reviewed by the BLM interdisciplinary team. Only one area was determined to have wilderness values. The designation of this area was considered in two alternatives in the supplemental draft EIS. Neither the Preferred alternative (in the supplemental draft EIS) nor the Proposed JMH CAP (in the final EIS) for managing the JMH CAP planning area recommend new WSAs. Please see the information provided in the updated Appendix 18 of the final EIS.

Since the supplemental draft EIS was issued, a settlement of a lawsuit involving WSAs in Utah has resulted in no further consideration of WSA or wilderness designations on BLM-administered public lands. The 13 WSAs proposed by citizen's groups were closely evaluated to assure that the management prescriptions in the alternatives of the EIS appropriately provided for management of sensitive resources. Please see the updated Appendix 18 in the final EIS.

BLM has evaluated the proposed VRM classifications of the Citizen's Alternative and has analyzed a range of VRM classification alternatives. The analysis of VRM classifications in the Proposed JMH CAP shows adequate protection of land and resource values within BLM's multiple use policy.

Additionally, please refer to Appendix 18 in final EIS.

Special Management Area Management

Comment:

The Wildlife and Wildlands Alternative adopts the BLM's management objectives for special management areas: "The planning area would be managed to protect unique resource values of special management areas."

In accordance with Section 202 of the Federal Land Policy Management Act, which directs the Secretary of the Interior to "give priority to the designation and protection of areas of critical environmental concern," the Wildlife and Wildlands Alternative adopts JMH Alternative 2.

The Wildlife and Wildlands Alternative would prevent new roads and developments in roadless areas, increase the size of some Wilderness Study Areas, establish new WSAs for lands identified for Wilderness designation by citizens inventories, and recommend that all deserving WSAs and wildlands be designated as wilderness by Congress. Roadless areas identified by the Wyoming Wilderness Coalition would be managed as Wilderness Study Areas.

Response:

Please see the information provided in the updated Appendix 18 of the final EIS. There seems to be a widely held belief that BLM will manage public lands like wilderness if the public lands are designated as ACECs or some other similar designation. The need for special management attention and some protection of an important resource, value, or process are the reasons for ACEC designation. Various protection levels might be considered during the planning process with public involvement, and an appropriate level is established based on the important values of the area. Considered this way, the protection level would probably be the same, regardless of whether an area was designated an ACEC. What might differ would be the level of management attention, which should be higher in an ACEC.

The areas proposed under Alternative 2 of the supplemental draft EIS were evaluated against the relevance and importance criteria for ACEC designation (Appendix 1 of the supplemental draft EIS) and analyzed under that alternative. The Proposed JMH CAP does not recommend the areas identified under Alternative 2 for ACEC designation; however, it does provide an appropriate level of protection for these resources. The Proposed JMH CAP does recommend the expansion of an existing ACEC.

Since the publication of the supplemental draft EIS, there has been a change in the policy regarding WSAs. Please see the information provided in the updated Chapter 1 and Appendix 18 of the final EIS.

Air Resources Management

Comment:

The Wildlife and Wildlands Alternative gives priority to the restoration and protection of air and water quality.

The Wildlife and Wildlands Alternative adopts the BLM's management objectives for air and water quality. For air resources, that objective provides: "The planning area would be managed to maintain and, where possible, enhance present air quality levels and, within the scope of BLM's authority, minimize emissions that may add to acid rain, cause violations of air quality standards, or reduce visibility."

However, unlike the BLM's alternatives, the Wildlife and Wildlands Alternative adopts aggressive management actions implemented in close coordination with state and federal regulatory agencies to achieve the stated objectives:

- New emission sources are not permitted until/unless state and federal regulatory agencies perform major and minor source increment consumption analyses for PSD I and PSD II areas.
- Best available control technology (BACT) is applied to existing "grand fathered" major emission sources located in Southwest Wyoming.
- Best available retrofit technology (BART) is applied to all emission sources in Southwest Wyoming causing or contributing to visibility reduction in pristine Class I areas in the Bridger and Fitzpatrick Wilderness areas.
- Emissions of hazardous air pollutants, such as benzene, from mineral and energy production facilities are reduced and, where possible, eliminated through application of new technologies and industrial processes.
- BLM shall enforce Standard Federal Oil and Gas Lease Term # 6 (Conduct of operations) to control operations in a manner that minimizes impacts to air resources.
- Particulate emissions (PM 10 and PM 2.5) are controlled by ensuring timely and complete reclamation of disturbed areas and adequate dust control measures.
- The planning area is re-designated PSD Class 1.

Response:

Current regulations require a formal PSD Increment Consumption Analysis for major emission sources only. The State of Wyoming has the regulatory responsibility to perform PSD Increment Consumption Analyses. The BLM compares potential cumulative impacts to the entire PSD increments as an indication of potential significance under the NEPA process (see response to comment number 100,376 under Air Resources Management).

The responsibility and authority for protection and management of the air resource, not only for Jack Morrow Hills, but for all of Wyoming, lies with the State of Wyoming. Consequently, to ensure air quality does not degrade and potentially improves, it is suggested that BLM remains in close coordination with the state regulatory agency as management decisions are being contemplated for the area. The DEQ through the Air Quality Division is the recognized permitting authority for both state and federal regulations.

Concern has been expressed about cumulative effects on the project and surrounding areas, particularly whether the Class I or Class II increment has been consumed. To date, there have been no regulatory analyses performed to confirm or dispel this concern. The Air Quality Division is now rectifying this deficiency by developing a comprehensive statewide current and baseline emission inventory and the necessary modeling protocols to conduct these analyses.

In exercising its permitting authority, the state requires application of BACT on all new or modified sources, whether they are minor or major emission sources. In this regard, the state is more stringent and consequently more protective of the air resource than federal requirements, which do not require minor source permitting. Although there has been some discussion of potentially applying BACT to "grandfathered" sources and BART to all emission sources in southwest Wyoming, it must be recognized that specific regulatory limitations exist in state and federal rules in this regard. BACT will be determined, on a case-by-case basis, and applied pursuant to Wyoming Air Quality Standards and Regulations (WAQSR) Chapter 6, Section 2.

In 1989, EPA approved the State of Wyoming's State Implementation Plan (SIP) for Visibility Protection. The plan permits a federal land manager to certify visibility impairment in a Class I Area that is reasonably attributable to a source or small group of sources. When impairment is certified, the state can then require BART at that source. To date, there have been no certifications of impairment in the State of Wyoming. As part of the SIP for Visibility Protection, the state is required to perform a long-term strategy review every 3 years. In June 2003, the state submitted the 2003 Review Report. This report can be found on the Air Quality Division Web site (http://deq.state.wy.us/aqd/visibility.asp).

HAP emissions from new or modified sources are evaluated during the permitting process. Oil and gas production is permitted according to Wyoming Oil and Gas Production Facilities, Chapter 6, Section 2, Permitting Guidance. HAPs are evaluated and controlled through the Presumptive BACT requirements in this guidance. For non-oil and gas sources the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) are adopted by reference in WAQSR Chapter 5 Section 3. Any new or reconstructed source that is not listed under NESHAP and is a major emitter of HAPs is subject to a case-by-case MACT determination under WAQSR Chapter 6, Section 6.

The BLM does not have the authority to implement any PSD area classification. Pursuant to the CAA, that authority rests solely with the Administrator of the EPA and/or the Governor of Wyoming.

Comment:

The undersigned groups endorse the Citizens Wildlife and Wildlands Alternative (attached as exhibit 2) and ask that it be given careful and thorough consideration in the final EIS and ultimately, that it be adopted by the BLM in the final Record of Decision. Should, however, the BLM determine that the Citizens Wildlife and Wildlands Alternative is "unreasonable" and thus inappropriate for further consideration in the planning process, we request that the BLM explain in detail the precise rationale for its determination, and how it comports with the requirements of NEPA and FLPMA, applicable case law cited herein, and the former Solicitor's legal analysis of this issue. (See Exhibit 1). Similarly, should the BLM determine that a specific aspect or aspects of the Citizens Alternative be unreasonable, we request that other elements of the alternative deemed reasonable be carried forward for analysis and evaluation in the final EIS.

Response:

Please see above responses for the Citizen's Wildlands and Wildlife Alternative, comment number 100,453.

Adaptive Management Strategy

Comment:

The Wildlife and Wildlands Alternative adopts an Adaptive Management Strategy (AMS) substantially different from that described in the Preferred Alternative:

- The Citizens Alternative rejects the notion, set out in the BLM's Preliminary Adaptive Management Implementation Strategy that "it is impossible to predict how future development will proceed" (A17-1). Under the Wildlife and Wildlands Alternative, BLM exercises its regulatory authority to control and limit the pace, location and level of development in a manner that is consistent with valid existing rights and protection of the environment. Through a combination of lease suspensions, lease stipulations, conditions of approval, monitoring, mitigation measures and other mechanisms, the BLM will assure that future development on existing leases does not conflict with or adversely impact other uses and resource values.

- New leases will not be issued in the planning area during the life of the plan.
- Development on existing leases (those that could not be purchased or exchanged) would be controlled and limited to provide for staged development on a lease-by-lease basis, ensuring minimal environmental impacts and resource conflicts.
- The list of monitored "resource indicators" (Table A17-1) would be expanded to include: 1) air and water quality, including compliance with CAA State Implementation Plans and DEQ water quality standards; 2) threatened and endangered species; 3) sensitive species representative of various habitat types in the planning area; 4) significant heritage resources; 5) reclamation success; 6) invasive weeds and exotic species.
- The management objectives and goals (A-17-2) are revised to conform to those set out in the Wildlife and Wildlands Alternative. Wildlife resources is added as a discrete resource for which management objectives shall be established.
- The "overall approach" under the Wildlife and Wildlands Alternative is modified significantly to retain all existing lease suspensions in the planning area while lease exchange and/or buyout is pursued, and site-specific lease development plans are created.
- In accordance with BLM's regulations at 43 CFR § 1610.4-9, intervals and standards for monitoring would be established and displayed in the Adaptive Management Plan.
- The adaptive management strategy is completed and included in the final EIS for public review and comment. The AMS is incorporated into the Record of Decision as a binding and enforceable instrument. Pending completion of the AMS and issuance of the ROD, existing oil and gas leases remain under suspension, and no new leases are offered.

Response:

Proposed changes in the BLM management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy to include a more traditional monitoring and adjustment approach. Some flexibility is maintained where possible, and field data would be used in impact analyses and in gauging progress toward meeting the management goals. Please refer to the updated version of Appendix 17 in the final EIS for details.

Although changed, Appendix 17 still incorporates many of the provisions you have suggested.

BLM considered the option of closing the planning area to new leasing; however, this option was not analyzed in detail for reasons described in Section 2.1.3.3 of the supplemental draft EIS.

BLM considers the indicators it has identified to be key indicators to the overall function of the ecological system in the planning area. The indicators BLM has identified include or are strongly related to the "indicators" you have suggested.

BLM feels that the objectives and goals identified in Chapter 2 are adequate. The Land and Water Resources objective adequately covers wildlife management goals.

Site-specific plans will be created with lessees on a case-by-case basis. In addition, see the minerals portion of responses to the Citizen's Wildlife and Wildlands Alternative.

See Appendix 17 for details on initial monitoring activities. As implementation of the monitoring strategy progresses, monitoring intervals and standards will be refined or adjusted as necessary.

A-19.22 MISCELLANEOUS

Comment Number: 100,327

Comment:

The scientific values in the JMH have not been satisfactorily measured. As my comments may lead you to conclude, I am also very concerned about losing scientific values before we even know what we might have lost. For example, this area, in my opinion, has not been adequately researched to know all of the ecosystem components and processes. Without knowing what is there, we are in danger of losing ecosystem components and processes without even knowing that we lost something.

Response:

Information in the supplemental draft EIS uses the best available data at the time of preparation. Additional surveys and information will be gathered during site-specific analysis and as funding and personnel are available.

Comment Number: 100,376

Comment:

The report "Conservation Management of America's Public Lands: An Assessment and Recommendations for Progress 25 Years After FLPMA" provides further guidance and should be considered by BLM as it completes the JMH CAP and prepares the final supporting EIS. A copy of this white paper by the National Wildlife Federation and the Natural Resources Defense Council is attached.

Response:

Thank you for your comment. BLM has reviewed this document. FLPMA provides BLM the overall guidance for land use planning. BLM is dedicated to implementing that to the best of our abilities.

Comment Number: 100,448

Comment:

The BLM's December 14, 2001, Scoping Notice is blatantly biased toward wildlife and environmental perspectives (e.g., "responsibility of each generation as a trustee," "widest range of beneficial uses of the environment", etc.).

Response:

BLM disagrees. BLM's scoping notice was published in the *Federal Register* on December 6, 2001 and identified preliminary issues to be addressed in the supplemental draft EIS based on existing resource information and public comment on the original draft EIS (June 2000). These issues were Minerals Resource Management and Rights-of-Way; Resource Uses Affecting Vegetation, Soils, Air, and Watershed Values; Recreation and Cultural Resource Management; and Special Management Area Resource Management. Comments provided during the scoping period included concerns for a wide variety of resources and issues, including wildlife resources. All of these were addressed to some degree in the supplemental draft EIS.

Comment Number: 100,454

Comment:

The Preferred Alternative is, in nearly every instance, consistent with current livestock grazing (i.e., No Action Alternative). This further confirms the position that we have taken in earlier comments that grazing should never have been included in the CAP analysis because it had been fully addressed in the Green River Resource Management Plan.

Response:

BLM disagrees. To follow the position you have taken in the process of developing the supplemental draft EIS and the final EIS would be a procedural flaw in meeting the CEQ and planning regulation requirements. It is absolutely necessary to consider and address all resource and land uses in a planning area analysis. Your position could not have been substantiated had BLM not followed this proper procedure.

Table A19-1. Substantive Public Comments

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
11	Hinesley, Herschel J.	Wyoming Prospectors Association	Minerals and Alternative Energy Resources Management
18	Mildrexler, David		Wildlife Habitat Management; Travel Management, Access, and Realty; Special Management Areas
21	Hansen, Greg A.		Recreation Resources Management
22	Wirth, Jason		Recreation Resources Management
24	Giovale, Paul		Recreation Resources Management
25	Jacques, Phillip L.		Recreation Resources Management
26	Beaty, Mark		Recreation Resources Management
34	Taylor, Edward		Recreation Resources Management
39	Ostlind, Emilene	University of Wyoming Student	Travel Management, Access, and Realty
46	Campbell, Keith D.		Vegetation Management
52	Carton, Jolene M.		Heritage Resources Management; Socioeconomics
100,018	Serdiuk, Leonard		Special Management Area Management
100,025	Silkensen, Ralph		Minerals and Alternative Energy Resources Management
100,036	Blair, Dan		General Land and Water Resource Management; Heritage Resources Management; Special Management Area Management
100,037	Lambert, James S.		Minerals and Alternative Energy Resources Management
100,042	Atwood, Dean		Special Management Area Management
100,043	Kesselheim, Chelsea		Special Management Area Management
100,049	Hittel, Earline F.		Special Management Area Management
100,057	Swan, Steve		Wildlife Habitat Management; Special Management Area Management
100,058	Silkensen, Ralph		Minerals and Alternative Energy Resources Management
100,059	Waitkus, Brian R.		Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Special Management Area Management; Air Resources Management
100,063	Perry, Joseph		Special Management Area Management
100,068	Cappozzelli, J.		Wildlife Habitat Management
100,069	Salvo, Mark N.	Grasslands and Desert Advocate	Wildlife Habitat Management
100,084	Mallow, Dawn		Heritage Resources Management
100,088	Hipp, Martha		Heritage Resources Management
100,095	Campbell, Bruce D.		Wild Horse Management
100,106	Aengst, Peter		Minerals and Alternative Energy Resources Management
100,134	Wedow, Nancy		Heritage Resources Management
100,137	Stanley, Georgie		Cumulative Effects; Water Resource Management
100,140	Pearson, Sheila		Heritage Resources Management
100,145	Calonge, Guy Paul		Water Resource Management; Wildlife Habitat Management; Travel Management, Access, and Realty

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
100,156	Gillette, John L.		Recreation Resources Management; Special Management Area Management
100,167	Alderson, George		Special Management Area Management
100,183	Degenfelder, D. Steven		Wildlife Habitat Management; Heritage Resources Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
100,202	Smith, James H.		Heritage Resources Management
100,220	Underwood, Carlton	Northern Arapaho Business Council	Governments and Agencies
100,221	Harnsberger, Scott H.	Treasure of Fremont County	Governments and Agencies
100,232	Engle, Hilarie	Committee for the High Desert	Cumulative Effects; Water Resource Management; Wildlife Habitat Management
100,240	Brabec, Dennis J.		Wildlife Habitat Management; Heritage Resources Management; Recreation Resources Management; Minerals and Alternative Energy Resources Management; Special Management Area Management; Adaptive Management
100,258	Braun, Clait E. PhD.	Grouse, Inc.	Wildlife Habitat Management; Special Management Area Management
100,295	Newcomb, Anne		Minerals and Alternative Energy Resources Management
100,327	Thompson, Craig		Cumulative Effects; Wildlife Habitat Management; Miscellaneous
100,332	George, Gene R.	Gene R. George and Associates	Water Resource Management; Wildlife Habitat Management; Travel Management, Access, and Realty; Minerals and Alternative Energy Resources Management; Visual Resources Management; Special Management Area Management; Socioeconomics; Adaptive Management
100,334	N/A	Popo Agie Conservation District	Governments and Agencies
100,335	Etchepare, John	Wyoming Department of Agriculture	Governments and Agencies
100,336	Wichers, Bill	Wyoming Game and Fish Department	Governments and Agencies
100,338	Boomgaarden, Lynne	Wyoming Office of State Lands and Investment	Governments and Agencies
100,339	Corra, John V.	Wyoming Department of Environmental Quality	Governments and Agencies
100,340	Cook, Lance	Wyoming State Geological Survey	Governments and Agencies
100,341	Thoman, Mary	Sweetwater County Conservation District	Governments and Agencies
100,342	Loper, Dick	Wyoming State Grazing Board	General Land and Water Resource Management; Fire Management; Water Resources Management; Wild Horses Management; Livestock Grazing Management; Wildlife Habitat Management; Heritage Resources Management; Adaptive Management
100,343	Zakotnik, Gary	GZ Livestock	Fire Management; Livestock Grazing Management; Wildlife Habitat Management; Heritage Resources Management; Socioeconomics

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
100,344	Parsons, C. C.	EOG Resources	Heritage Resources Management; Minerals and Alternative Energy Resources Management; Socioeconomics; Adaptive Management
100,345	Carpenter, Len	Wildlife Management Institute	Cumulative Effects; Range of Alternatives; Minerals and Alternative Energy Resources Management; Adaptive Management
100,350	Welch, Arthur J.		Wildlife Habitat Management; Minerals and Alternative Energy Resources Management
100,352	Schnauber, Jane F.	Schnauber, Hall & Edman, P.C.	Socioeconomics
100,358	Hale, Robert		Vegetation Management; Visual Resources Management
100,365	Spillman, Bill		Air Resources Management
100,372	Mehle, Patrick		Visual Resources Management
100,373	Morris, Timothy	Berco Resources LLC	Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Visual Resources Management; Adaptive Management
100,375	Gillespie, Norman		Wildlife Habitat Management
100,376	Zimmerman, Kathleen; Baesler, Larry; Wald, Johanna H.	National Wildlife Federation; Wyoming Wildlife Federation; Natural Resources Defense Council	National Environmental Policy Act; Cumulative Effects; Public Participation; General Land and Water Resource Management; Water Resources Management; Livestock Grazing Management; Vegetation Management; Wildlife Habitat Management; Heritage Resources Management; Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Visual Resources Management; Special Management Area Management; Air Resources Management; Adaptive Management; Miscellaneous
100,377	Marriott, Hollis		Vegetation Management; Minerals and Alternative Energy Resources Management; Adaptive Management
100,378	Kessler, Stephanie		Heritage Resources Management; Recreation Resources Management; Minerals and Alternative Energy Resources Management; Socioeconomics
100,379	Benson, Leo		Livestock Grazing Management; Wildlife Habitat Management; Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Adaptive Management; Monitoring
100,380	Howell, Liz	Wyoming Wilderness Association	Travel, Access, and Realty Management; Special Management Area Management; Air Resources Management
100,381	Blewer, Mac		Range of Alternatives; Heritage Resources Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
100,383	Lister, Jim	EnCana Oil and Gas (USA), Inc.	Heritage Resources Management; Minerals and Alternative Energy Resources Management; Adaptive Management

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
100,384	Clayson, Tom	Anadarko Petroleum Corporation	Water Resources Management; Heritage Resources Management; Minerals and Alternative Energy Resources Management; Adaptive Management
100,385	Smith, Michael	National Trust for Historic Preservation	Heritage Resources Management; Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
100,386	Hill, Vernon	Shoshone Business Council	Governments and Agencies
100,388	Doane, Marian		Minerals and Alternative Energy Resources Management
100,389	Doane, Marian	Friends of the Red Desert	Minerals and Alternative Energy Resources Management
100,390	Bower, Dru	Petroleum Association of Wyoming	Wild Horses Management; Wildlife Habitat Management; Heritage Resources Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
100,391	Dickinson, Jerry		Wild Horses Management
100,397	Freitag, David		Minerals and Alternative Energy Resources Management
100,419	Miller, Lorna		Minerals and Alternative Energy Resources Management
100,432	Dillon, John	CamWest Exploration LLC	Heritage Resources Management; Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Adaptive Management
100,433	Lindley, Laura	Bjork, Lindley, Danielson, and Little	Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Special Management Area Management; Socioeconomics; Adaptive Management
100,438	Dowd, Patricia	Sierra Club	Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
100,440	Peay, Jim P.	Kerr-McGee Rocky Mountain Corporation	Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Visual Resources Management; Special Management Area Management; Adaptive Management
100,443	Dvorak, Peter		Minerals and Alternative Energy Resources Management; Adaptive Management
100,448	Schilling, Bill	Wyoming Business Alliance	Wildlife Habitat Management; Miscellaneous
100,450	Bush, Jodi L.	Fish and Wildlife Service	Governments and Agencies
100,451	Hellyer, Rob	Hellyer Limited Partnership	Wild Horses Management; Livestock Grazing Management; Wildlife Habitat Management; Special Management Area Management
100,452	Young, Angie	Biodiversity Conservation Alliance	Cumulative Effects; Public Participation; Vegetation Management; Wildlife Habitat Management; Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Socioeconomics
100,453	Bell, Tom Doane, Marian Blewer, Mac	Friends of the Red Desert Wyoming Outdoor Council	Citizen's Wildlands and Wildlife Alternative

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
100,454	Magagna, Jim	Wyoming Stock Growers Association	Livestock Grazing Management; Wildlife Habitat Management; Miscellaneous
100,455	Molvar, Eric Heilig, Dan Koehler, Bart	Biodiversity Conservation Alliance Wyoming Outdoor Council The Wilderness Society	National Environmental Policy Act; Cumulative Effects; Range of Alternatives; Fire Management; Water Resources Management; Livestock Grazing Management; Vegetation Management; Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Visual Resources Management; Special Management Area Management; Air Resources Management; Socioeconomics; Adaptive Management
100,456	Molvar, Eric	Biodiversity Conservation Alliance	Water Resources Management; Vegetation Management; Wildlife Habitat Management; Recreation Resources Management; Minerals and Alternative Energy Resources Management; Visual Resources Management; Special Management Area Management
100,457	Cody, Cynthia		Governments and Agencies
100,458	N/A	Public Hearing Transcript—Rock Springs, Wyoming	Public Participation; Special Management Area Management; Socioeconomics
100,459	N/A	Public Hearing Transcript—Lander, Wyoming	Wildlife Habitat Management; Heritage Resources Management; Recreation Resources Management; Minerals and Alternative Energy Resources Management; Socioeconomics
100,492	Freudenthal, Dave	The State of Wyoming, Office of the Governor	Governments and Agencies
100,493	Andrea Cerovski	Red Desert Audubon Society	Wildlife Habitat management
200,002	Ruebelmann, George		Special Management Area Management
200,011	Anderson, John		Travel, Access, and Realty Management
200,014	Brister, Bob		Travel, Access, and Realty Management; Minerals and Alternative Energy Resources Management; Special Management Area Management
200,026	Bennatti, Carolyn		Travel, Access, and Realty Management; Special Management Area Management
200,027	Brittingah, Steve		Travel, Access, and Realty Management
200,037	Desimone, Vince		Special Management Area Management
200,049	Jones, Rob		Travel, Access, and Realty Management
200,096	Shepard, Andrew		Special Management Area Management
200,145	Marrs, Graig		Travel, Access, and Realty Management
200,146	McDonald, Jazmyn		Socioeconomics
200,162	Pallesen, John		Monitoring
200,177	Ready, Merril J.		Livestock Grazing Management
200,180	Wright, Barbara S.		Recreation Resources Management
200,201	McMullen, Deena	IPAMS	Wildlife Habitat Management; Minerals and Alternative Energy Resources Management; Adaptive Management
200,206	Ulmer, Warren C.		Air Resources Management

Public Comment Number	Name	Affiliation	Category/Resource Program Associated With Comment Number
200,209	Amstrup, Steven C.		Vegetation Management; Minerals and Alternative Energy Resources Management; Socioeconomics
200,212	Dey, Eileen	Burlington Resources	Wildlife Habitat Management; Heritage Resources Management; Minerals and Alternative Energy Resources Management; Adaptive Management
200,213	Purves, Cathy	Wyoming Wildlife Federation	Socioeconomics
200,218	Hitchcock, Robb	NAPF	Cumulative Effects; Wildlife Habitat Management
200,223	Moseley, Claire M.	Public Lands Advocacy	Heritage Resources Management; Travel, Access, and Realty Management; Recreation Resources Management; Minerals and Alternative Energy Resources Management; Special Management Area Management; Adaptive Management

APPENDIX 20—SIGNIFICANCE CRITERIA AND ASSUMPTIONS

Table A20-1. Significance Criteria by Resource

Resource	Significance Criteria
Land and Water Resources	
Fire Management	Management actions or activities increase the costs related to the fire management program to the point where the overall effectiveness of the program is reduced.
Water Resources	Proper Functioning Condition (PFC) cannot be attained or maintained as a minimum physical state, or if the Wyoming Bureau of Land Management (BLM) Standards for Healthy Rangelands Standard #2 was not obtainable. Management actions or activities accelerate erosion and runoff and thereby alter the physical characteristics of streams, wetlands and riparian areas, or degrade water quality beyond the designated use of the receiving stream. Any loss of wetlands or wetland function, or violation of the requirements of Section 404 permits.
Wild Horses	Available forage is insufficient to sustain the appropriate management level (AML) of the herd, or the AML cannot be achieved or maintained.
Livestock Grazing	Management actions or activities cause a reduction in forage levels that would require livestock operators to reduce their permitted animal unit months (AUM).
Vegetation	The viability of protected plant species is jeopardized, with little likelihood of reestablishment after disturbance, or actions result in the need to list a species under the Endangered Species Act (ESA). Reclaimed areas do not attain adequate vegetation ground cover and species composition to stabilize the site within 5 years from disturbance, or there is invasion and establishment of noxious weeds that contribute to unsuccessful revegetation. Loss of habitat function or habitat value in BLM sensitive species habitats. Significance of an impact is also dependent on the importance of the resource and the proportion of the resource that would be affected relative to its occurrence in the vicinity.
Wildlife	The viability of a federally protected species is jeopardized, or actions result in the need to list a species under the ESA. BLM sensitive species or native wildlife species considered as vital, high, or moderate by the Wyoming Game and Fish Department (WGFD) Mitigation Policy show increased mortality or decreased survival rates. Any loss of habitat function or habitat value in vital, high, or BLM sensitive species habitats. Long-term displacement of elk, mule deer, or pronghorn from crucial habitat or birthing areas within the planning area.

Table A20-1. Significance Criteria by Resource (Continued)

Resource	Significance Criteria
Wildlife Continued	The significance of an impact is dependent on the importance of the resource and the proportion of the resource that would be affected relative to its occurrence in the vicinity.
Heritage Resources	The physical alteration, destruction, or loss of a resource listed or determined eligible for listing in the National Register of Historic Places (NRHP), or considered important to Native American groups. The criteria used to determine the significance of impact on heritage resources include the effect on NRHP eligibility, future research potential, and (in some cases) effects to resources suitability for religious or traditional uses.
Travel Management, Access, and Realty	Management actions or activities compromise public health and safety. Restrictions for the preservation of sensitive resources limit reasonable public access and use of the planning area, cause economic hardship for developers, and/or cause adverse effects to state or private inholdings.
Recreation Resources	Management action or activities eliminate recreation use in any area. Management action or activities affect a user's experience. Management actions or activities compromise public health and safety. A level of development occurs that prevents meeting the recreation objectives for the planning area or that has a direct or indirect effect on wilderness suitability.
Minerals and Alternative Energy Resources Management	Management actions or mitigation requirements result in a greater than 25 percent decrease in development activity over the planning period. Management actions or mitigation requirements cause development of the resource to be infeasible or economically nonviable.
Visual Resources	Activity or development occurs in an area that would be incompatible with the Visual Resource Management (VRM) classification objective.
Special Management Areas and Other Management Areas	Development or activity occurs that would be incompatible with the Special Management Area (SMA) objectives and management prescriptions. Activity or development impairs the suitability of WSAs for preservation as wilderness, or adversely affects resources to the point that the current SMA no longer meets criteria for designation.

Table A20-1. Significance Criteria by Resource (Continued)

Resource	Significance Criteria
Air Resources	A violation of the National Ambient Air Quality Standards (NAAQS) or Wyoming Ambient Air Quality Standards (WAAQS), or the further aggravation of an existing air quality violation. Prevention of Significant Deterioration (PSD) increments for Class I or Class II areas are exceeded. Increased toxin concentrations are above designated thresholds. Atmospheric deposition impacts are above terrestrial voluntary guidelines (3-5 kg total nitrogen per hectare/year; 5 kg total sulfur per hectare/year) or above aquatic levels of acceptable change (10 percent change in acid neutralizing capacity). Visibility impacts to sensitive areas are above the designated 0.5 and 1.0 deciview (dv) change threshold.
Socioeconomics	This analysis evaluated the long-term trends to determine the approximate changes likely to occur in these variables under existing conditions. Annual deviations from the trend over this 20-year period are considered the threshold of what can be tolerated by the regional economy for these three variables. Any changes beyond these thresholds would likely cause significant impacts to local communities. See Section 4.12.1 for further details.

Table A20-2. Assumptions by Resource

Resource	Assumptions
Land and Water Resources	
Fire Management	A direct relationship exists between density of human use within the planning area and the frequency of person-caused fires. A direct relationship exists between fuel loads (standing and nonstanding vegetation) and potential fire size and intensity. The amount of area to be treated with prescribed fire is not expected to exceed 5,000 acres over the 20-year planning period.
Water Resources	Any substantial disturbance to the soils or changes in vegetative cover has an adverse effect on watershed health and water quality. Surface disturbances result in accelerated erosion and runoff, increasing sediment and nutrient loads to local channels. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, soil type, time and degree of disturbance, existing vegetation, and precipitation.
Wild Horses	The Divide Basin Wild Horse Herd would continue to be maintained at the AML of 415 to 600 horses over the long term through gathering efforts. Except under Alternative 2, approximately 1 acre would be disturbed, and vegetation and forage removed, through constructing and using wild horse traps every 3 years for gathering.
Livestock Grazing	Livestock grazing would occur throughout the entire Jack Morrow Hills (JMH) coordinated activity plans (CAP) planning area. Anticipated grazing use would increase over the planning period to the fully permitted active use amount (26,830 AUMs) under Alternative 1, but would maintain the historic use (11,569 AUMs) under all other alternatives. Although some areas are more suitable for different classes of livestock, the impacts are assumed similar for all areas and therefore are not discussed separately. The rate of revegetation of disturbed areas varies by type of activity. Construction of fences, pipelines, water wells, troughs, and reservoirs would cause a loss of some soil and vegetation. Vegetation would be reestablished along fences and pipelines within 3 to 5 years, whereas water wells, troughs, and reservoirs would remain disturbed during their useful life and would be revegetated upon abandonment.
Livestock Grazing Continued	Except for Alternative 2, approximately 23 livestock water developments (e.g., pits, ponds, and water wells) would be constructed or rebuilt in the JMH CAP planning area over the 20-year planning period, disturbing approximately 23 acres. Under Alternative 2, only 11 livestock water developments would be constructed or rebuilt in the JMH CAP planning area over the 20-year planning period, disturbing approximately 11 acres. Prescribed burns and wildfires would cause a loss of vegetation for a period of 1 to 2 years and a change in vegetation for 15 to 30 years.

Table A20-2. Assumptions by Resource

Resource	Assumptions
Vegetation	Adequate vegetative ground cover and species composition for site stabilization would occur in 3 to 5 years. Brush reestablishment in disturbed areas would create a vegetative landscape similar to adjacent lands in excess of 20 years. Adequate forage is available for current wildlife objective numbers. All management actions associated with the protection of wildlife habitat and cultural resources have a direct benefit to vegetation management. All surface disturbing activities would require reclamation as per the Rock Springs District Reclamation Monitoring Plan, and new oil and gas leases would have stipulations for protection of threatened, endangered, and Wyoming BLM sensitive species.
Wildlife	The WGFD herd management objective for the Steamboat elk herd unit would remain at 500 under the No Action Alternative, and increase to the current objective of 1,200 under Alternatives 1, 2, 3, and the Proposed JMH CAP. Sufficient habitat exists to maintain WGFD big game objectives for portions of herd units within the planning area. A portion of key habitats within the planning area would have year-round activity occurring. The level of activity within the planning area would increase and additional activity would occur within portions of key habitats. Some wildlife adaptation to activities would occur within the planning area; however, this would not outweigh the effects of disturbance attributed to the lack of topographic escape and cover for elk and mule deer. As development and recreational activities increase throughout the planning area, increased fragmentation of habitats would occur. Disruptive activities in key habitats are expected to cause displacement of wildlife. Actions that improve watershed quality are directly related to improving wildlife habitat in riparian areas. Any substantial disturbances to the soils or changes in vegetative cover that have an adverse effect on watershed health and water quality would adversely affect associated fisheries. Elk and mule deer compete for birthing and crucial winter range habitat use.

Table A20-2. Assumptions by Resource (Continued)

Resource	Assumptions
Wildlife Continued	Greater sage-grouse populations will continue to decline in the planning area under the No Action Alternative and Alternatives 1 and 3. Greater sage-grouse population declines in the planning area will slow under Alternative 2 and the Proposed JMH CAP because of maintenance and/or improvement of habitat. Only 50 percent of the greater sage-grouse nesting habitat identified is expected to be suitable for nesting activities, and only the sagebrush vegetation within greater sage-grouse winter range is expected to be suitable for wintering habitat. The majority of oil and gas leases contain stipulations for a minimum of seasonal protection in sensitive wildlife habitats, and new oil and gas leases would have stipulations for protection of threatened and endangered and Wyoming BLM sensitive species. Livestock water development depletion calculations under each alternative are based on the following assumptions: 1) all are installed in year 1 of the 20-year planning period, 2) ponds average one-quarter acre in surface area, 3) evaporation rate from surface water equals the summer-time peak rate of one-quarter inch per day, 4) water would remain in the pond for 48 days, and 5) all would be developed in the Colorado or Platte River systems. It is assumed that each water development within the planning area causes a depletion to the Colorado or Platte River system because all water used for livestock pits, ponds, and water wells and/or water used for drilling and completion of wells within the Green River and Sweetwater River basins contributes to the surface flows of the Colorado or Platte Rivers or their tributaries.
Heritage Resources	The overall densities of archeological sites in the planning area would be approximately 3.2 sites per 640 acres (one section). Approximately one-third of the sites would prove to be significant in terms of NRHP criteria.
Travel Management, Access, and Realty	The majority of right of way (ROW) locations are the result of development in the area. Exchanges of public land for state lands in sensitive resource areas would be pursued, and access to state and private inholdings would be maintained.
Recreation Resources	Recreation activity levels would vary by each alternative and would be related to how much recreational opportunity would be created or lost because of other projected development and activities. The specific assumptions are presented in Section 4.12, Socioeconomics. Dispersed recreation use is assumed to increase under each alternative. OHV use is to remain constant or to increase for a few years and then remain constant or decline slightly. New large-scale recreation facilities or developments would not be constructed during the planning period. Existing recreation facilities may be upgraded or improved.

Table A20-2. Assumptions by Resource (Continued)

Resource	Assumptions
Recreation Resources Continued	Hunting for elk is to remain constant for all alternatives except Alternatives 1 and 2, where the number of hunting days is expected to increase slightly in early years because of dispersion of animals and decreased access, and begin to decline in the later part of the study period. Other big game hunting would remain constant. Greater sage-grouse hunting is expected to decline under the No Action Alternative and Alternatives 1 and 3, as populations continue to decline. Greater sage-grouse hunting is assumed to remain constant under Alternative 2 and the Proposed JMH CAP.
Minerals and Alternative Energy Resources Management	The effects discussed in the analysis are based on the estimated levels of development activity for the management actions that would be implemented under each alternative (Appendix 13). The BLM actions and land uses under each alternative would be required to comply with existing laws, regulations, guidelines, and standards for multiple use of public lands. The comparison of management alternatives assumes that increased resource mitigation generally results in increased costs for activities. Prescribed mitigation measures through lease stipulations would be successful and adjusted over time to meet resource objectives. **Oil and Gas.** A total of 221 wells would be drilled under the No Action Alternative; 264 wells under Alternative 1; 163 wells under Alternative 2; and 205 wells under Alternative 3 and the Proposed JMH CAP. All existing leases would see some development over the 20-year planning period. Development activities would be concentrated in the high development potential area. Under the Proposed JMH CAP, wells drilled on existing leases in Area 3 would happen during the first 11 years of the planning period (8-year maximum lease term, plus 3-year suspension release). Under the Proposed JMH CAP, the unleased portions of Areas 1 and 2 would be leased; once leases expire, they would be available to be released. To avoid drainage from state and/or private fluid mineral development, adjacent 160-acre spacing areas could be accessed by directional drilling (probably from state or private surface locations). It is also assumed that because there is a small amount of state and/or private mineral land within the planning area, only a minimal amount of drainage would be likely to occur. Up to 38 new production wells would be drilled in Nitchie Gulch, with a maximum well density of six wells per section. This development is expected to occur over the first 5 years of the planning period. Other producing units in the planning area (Buccaneer, Rim Rock, and Steamboat Mountain units) are developed at a density of 640 acres per well. Future exploratory activity would be widely spaced; however, development activity would most likely occur at a density of 160 acres per well.

Table A20-2. Assumptions by Resource (Continued)

Resource	Assumptions
Minerals and Alternative Energy Resources Management (Continued)	Ultimate gas recovery from existing gas wells is estimated to be 145.4 billion cubic feet. Approximately 24.3 billion cubic feet of gas is left to produce from these active wells. Based on the production history of wells in the planning area, the average estimated ultimate gas recovery is expected to be 2.3 billion cubic feet per well. Decline curve analysis indicates that the average well would produce about 2.3 billion cubic feet of gas over a lifespan of 26 years before declining to an uneconomic rate, which would then result in abandonment. The ratio of gas to oil-condensate production is assumed to remain similar to its present ratio. At this ratio, an average well would produce only 117 barrels of oil each year. **Surface Disturbance.** The amount of surface disturbance per well is based on standard industry practices and compliance requirements for existing regulations on surface-disturbing activities. Access Roads: • 40 feet total width • 12- to 14-foot-wide travelway • 4.8 acres initial disturbance per linear road mile • 1.5 miles of road construction for exploration wells • 0.375 miles of road construction for development wells • 4.0 acres long-term disturbance per producing well (no stabilization or revegetation of barrow ditch) • 4.0 acres of access road stabilized per abandoned dry well, after 3 years • 4.0 acres of access road stabilized after abandonment of each producing well, after 3 years • Road standards would be in conformance with guidelines issued in BLM Manual 9113 (Roads) and Surface Operating Standards for Oil and Gas Exploration and Development (1989). Drill Pads: • 3.0 acres initial disturbance per average well pad • 0.7 acres long-term disturbance per producing well • 2.3 acres stabilized per producing well, after 3 years • 3.0 acres stabilized per abandoned dry well, after 3 years • 0.7 acres stabilized after abandonment of each producing well, after 3 years.

Table A20-2. Assumptions by Resource (Continued)

Resource	Assumptions
Minerals and Alternative Energy Resources Management (Continued)	Pipelines and Powerlines: • 6.0 acres initial disturbance per producing well • 5.5 acres stabilized per producing well, after 3 years • 0.5 acres long-term disturbance per producing well • 0.5 acres stabilized after abandonment of each producing well, after 3 years. In general, oil and gas wells drilled in the depth ranges expected in the planning area require 1 to 1.5 acre-feet of water. Coalbed methane wells drilled to depths greater than 1,200 feet would require 0.75 to 1 acre-feet of water consumption. **Coalbed Gas.** No coalbed wells are expected to be drilled until after 2002. Under all alternatives, except for Alternative 2, a maximum of 50 coalbed gas wells in two exploration projects are projected. Each project would include up to 16 dewatering wells and 9 gas wells. Under Alternative 2, up to 25 wells in one exploration project is expected. The surface disturbance rates associated with drilling oil and gas wells are similar to surface disturbance at coalbed gas wells for access roads, drill pads, and pipelines and powerlines. Most of the planning area is subject to strict water quality discharge requirements to comply with the Colorado River Basin Commission regulations on salinity control. Because the area with high coalbed gas potential is located within the Colorado River Basin, these requirements are assumed to apply to all coalbed gas development projects that may occur in the planning area. All produced water would be reinjected into the subsurface in compliance with water quality regulations. Existing gas wells in the planning area could be converted to injection wells at the end of their productive life. **Leasable Solid Minerals.** No oil shale development is expected during the planning period. There is low potential for coal and brine development. Existing coal mines and known coal reserves south of the planning area are expected to meet the demand for coal (USDI 1996), but limited amounts of exploration may occur within the planning area, except under Alternative 2, to evaluate future coal development potential. If coal exploration occurs at all, it would likely occur in the last 5 to 10 years of the planning period, and the most probably location for exploration would be in areas open to coal exploration within the Coal Occurrence and Development Potential Area. The amount of disturbance is expected to be between 10 and 15 acres, and occur in a single season. It is expected that disturbed sites would be fully reclaimed within 3 years of disturbance.

Table A20-2. Assumptions by Resource (Continued)

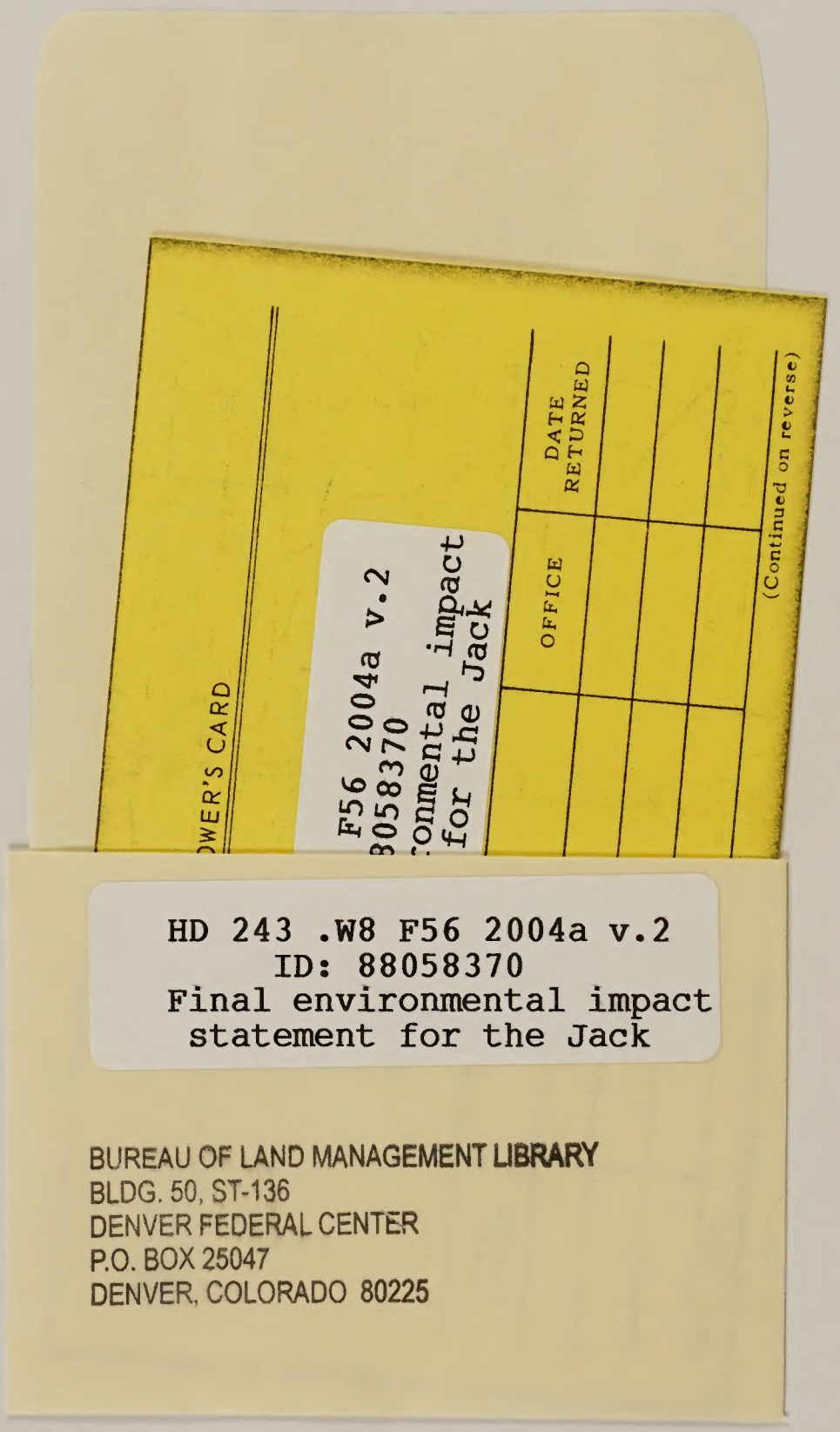
Resource	Assumptions
Minerals and Alternative Energy Resources Management (Continued)	The Leucite Hills, including Boars Tusk and Steamboat Mountain, are known to contain potash, but development of this resource within the planning area is unlikely during the planning period given existing surface use constraints, poor accessibility, high development costs, and better availability of potash from existing sources outside the planning area. **Locatable Minerals**. Existing levels of mining claim activity from the gold placers in the Dickie Springs/Oregon Gulch area are expected to continue through the planning period. The potential for development of a gold mine in this area is low. However, a hypothetical gold mine will be used to evaluate the impacts that would be associated with a commercial gold discovery. A hypothetical mine could process as much as 320,000 tons per year of ore and disturb about 53 acres over an 11-year life. Except under Alternative 2, exploration for diamond occurrences in association with the Quaternary volcanic rocks (lamprophyres) at Steamboat Mountain may occur during the planning period. About 2 acres of disturbance would be anticipated from these activities. Based on current information and commodity prices, gold and diamonds are the only mineral types that have potential for development in the planning area. **Salable Minerals**. Except under Alternative 2, demand for suitable construction material in the planning area is expected to increase during the planning period commensurate with the increase in oil and gas development and the needs of the Wyoming Department of Transportation (WYDOT) for reconstruction of U.S. Highway 191 and State Highway 28. Reconstruction of U.S. Highway 191 and State Highway 28 would require about 25 acres of disturbance in addition to the 4 acres of existing disturbance associated with WYDOT's pit along State Highway 28. Development of the mineral material sites is expected within the latter 10 years of the planning period. With the surface use constraints that exist in this area and the abundance of usable clay products available from other sources, no development of this resource is expected within the planning area during the planning period. **Alternative Energy**. Alternative energy developments, such as wind farms and solar arrays, could be developed in the planning area as long as a proposed development is compatible with the planning criteria under the respective alternative. However, there are currently no specific proposals to develop these resources in the planning area, and future demand cannot be anticipated.
Visual Resources	VRM classifications would be incorporated into all project planning. Specific activities or developments that would not be compatible with VRM objectives would avoid those areas or would be modified and designed to meet the objectives. Activities or developments on state or private inholdings would not be significantly different such that proposed VRM classifications for surrounding public lands could not be achieved or maintained.

Table A20-2. Assumptions by Resource (Continued)

Resource	Assumptions
Special Management Areas and Other Management Areas	All areas existing and proposed as areas of critical environmental concern (ACEC) meet the relevance and importance criteria. WSAs would remain under wilderness review and wilderness designation or nondesignation would not occur during the planning period. The WSAs would continue to be managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review. Activities or developments on state or private inholdings would not be significantly affected by SMA management prescriptions, nor would they significantly affect the criteria necessary to maintain designations.
Air Resources	In examining whether the BLM activities in the JMH CAP planning area will result in the exceedance of air quality standards, the results of the 1999 modeling remain valid.
Socioeconomics	Total employment in any given year may deviate by 10 percent above the trend to 12 percent below the trend (+4,600 jobs to -5,400 jobs). Grazing use would remain near the 5-year historic average of 11,602 AUMs, (10,649 cattle and 953 sheep) except for Alternative 1, where it would gradually increase during the study period to the fully permitted active use of 26,830 AUMs (23,627 cattle and 3,203 sheep). Elk hunting is expected to increase, following recent hunting trends and assumptions on elk dispersion and access under Alternatives 1 and 3 for the first part of the study period. Under No Action, Alternative 1, and Alternative 3, greater sage-grouse hunting is expected to decline during the first part of the study period and then be eliminated as populations continue to decline. Greater sage-grouse hunting is expected to remain constant at current levels under Alternative 2 and the Proposed JMH CAP. Recreational use associated with antelope and mule deer hunting would stay constant at the 5-year historic average for all alternatives. OHV use would be expected to increase by 2.5 percent per year for the first half of the study period for the No Action Alternative and Proposed JMH CAP because of improvements proposed for the Sand Dunes Recreation Area and increased interest in the planning area. However, OHV use would not be expected to follow this trend during the later part of the study period under these alternatives. Under Alternatives 2 and 3, OHV use would be expected to remain constant at the 3-year historic average or begin to decline because of access limitations and no proposed improvements to the Sand Dunes Recreation Area.
Socioeconomics Continued	Other recreational uses would be expected to increase between 1 and 2 percent per year under the various alternatives based on the prescribed management action. For comparison purposes, average (gas) production in the three-county area would follow historic production trends over the last 20 years.

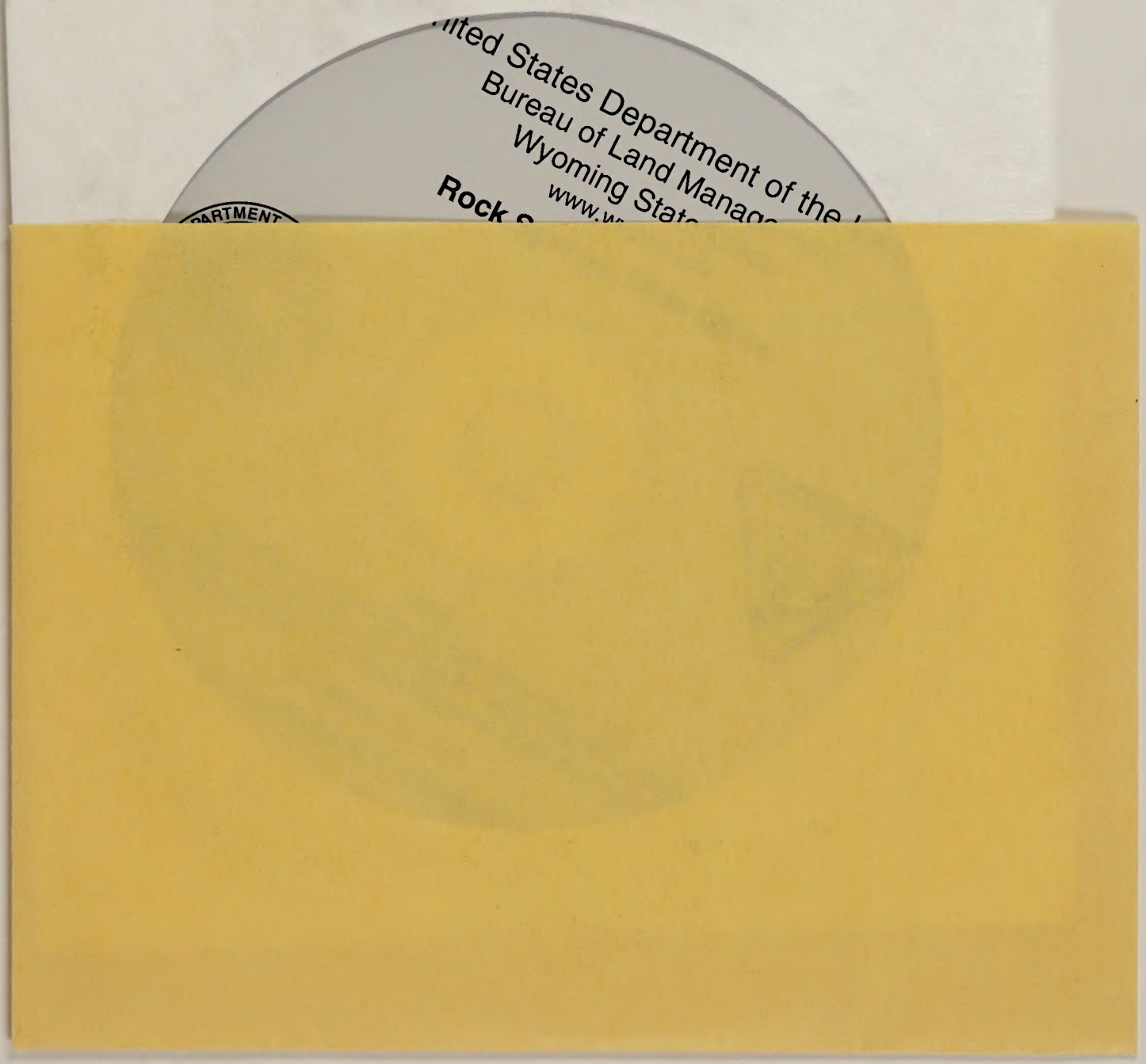
☆ U.S. GOVERNMENT PRINTING OFFICE: 2004 — 673-083 / 40026 Region No. 8

BUREAU OF LAND MANAGEMENT LIBRARY
BLDG. 50, ST-136
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, COLORADO 80225



HD 243 .W8 F56 2004a v.2
ID: 88058370
Final environmental impact
statement for the Jack

BUREAU OF LAND MANAGEMENT LIBRARY
BLDG. 50, ST-136
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, COLORADO 80225


ited States Department of the
Bureau of Land Manag
Wyoming Stat
www.
Rock